

## 42 litre cows on a 16% Crude protein diet *Are you sure?*



I was awakened to metabolizable and amino acids in dairy nutrition on a visit to Germany in 2010. Along with other members of my party I was given a presentation on a client's herd performance by a veterinary who was also a qualified nutritionist. Initially I thought I was being shown a diet for a beef herd when looking at the crude protein of the diet at 16%, and was naive enough to ask the question. The presenter highlighted, 42 litres herd average, the cows being milked three times a day and said, "a cow has no requirement for crude protein, they need metabolizable protein which provide amino acids, true protein- we ensure the cow has sufficient rumen degradable protein balanced with an increased carbohydrate supply to synthesize her own microbial crude protein (MCP) supply as efficiently as possible. She then gets more metabolizable protein (MP), true protein, which is absorbed in the small intestine increasing the supply of amino acids".

On returning home I made contact with Professor Gabriella Varga at Penn State University, professor of animal nutrition, a leading exponent on nitrogen balance, efficiency and milk production. She kindly shared her research and mentored me for next two years, following her retirement Professor Mike Hutjen's became my go to man , before introducing me to, Assoc. Professor Phil Cardoso, of Illinois University, a leading exponent of amino acid nutrition in dairy.

On returning from Germany I started to formulate 16% -16.50% CP glucogenic diets with superb results., increasing milk yield , but most significantly improving milk proteins and butter fat by at least 0.3% in most instances. In conjunction with this

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there was, and continues to be a positive effect on fertility. By reducing the surplus rumen nitrogen, and increasing nitrogen efficiency there is less energy expended in reducing blood urea. Over time my use of amino acid balancing has increased both in transition diets and fresh cow diets with continuing success. My journey has and continues to be one of discovery to better understand the principles of balancing diets for amino acids. And as Schwab et al.(2009) stated, “ to try and become one of the dairy nutritionists who want to better meet the needs and desires of their producers , and the health and profitability of their cows”

Initially I concentrated on fresh diets, focusing on milk yield and milk solids, with very exciting results. On Pelcomb Farm , Haverfordwest, implementing guidelines given to me by Assoc. Professor Phil Cardoso , I balanced the fresh diet for Lysine and Methionine at the ratio recommended and as advised by Professor Cardoso only fed the fresh cows a balanced diet for the first 120 days. At 120 days I withdrew the added protected lysine and protected methionine, and as Professor Cardoso advised the improved milk quality and yield continued until the end of the lactation. The improvements gained were, a 0.30% increase in both butter fat and protein, with an average extra 2 litres of milk per cow, which gave a very healthy improvement in income. Ideally, as I have discovered if you start by balancing the transition diet and follow on into the fresh cow diet, the benefits are numerous.

We tend to look at milk yield improvement, milk quality improvements but for me the most significant results are in animal health, starting in transition. The improved immunity gained by meeting the cows requirements for amino acids, result in healthier calving, better colostrum quality, improved embryo quality, and survival percentage, with healthier and bigger calves. The benefits on animal health and post calving performance are multiple, with increased labile tissue produced, mammary gland regeneration and priming, uterus demands being met, and increased immunity, with the best jewel being the improvement in fertility.



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