

# Precision feeding in ruminants

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## Introduction

Today's consumers demand increasingly efficient, low-impact food production, and that includes animal production.

This means that in addition to cost efficiency, the sector must also find effective solutions to reduce environmental impact. Meanwhile, we have become more aware of the risks of using antibiotics to improve efficiency, due to the development of multi-resistant bacteria. Not to mention taking into account animal welfare and quality of life.

Each of these challenges may seem very different, even contradictory, but solutions do exist, ideally addressing several issues at once. It's no surprise that the concept of "precision feeding" is becoming one of the industry's go-to solutions.

## Precision feeding

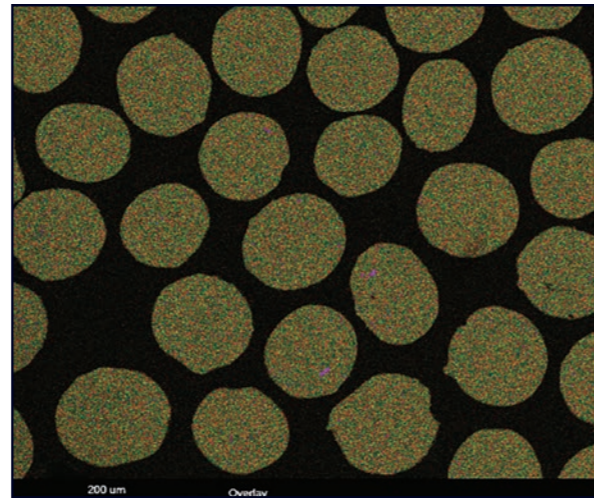
Precision feeding means feeding each and every animal according to its individual requirements. Not only on average, but at every feeding, every single day. It boosts efficiency, since the closer feed meets animals' nutritional requirements, the easier it is for them to reach their full genetic potential.

Providing less than the required amount of any important nutrient (e.g. energy, amino acids, vitamins, (trace) minerals) will negatively impact performance. Providing the right amount of needed nutrients is a sustainable way to use resources, ensure optimal performance and reduce environmental footprint by limiting waste of nutrients.

## Mineral homogeneity

One of the main challenges in precision feeding is the low inclusion of essential nutrients like minerals. In fact, the inclusion level can be so low that it is difficult to ensure homogenous distribution. This can lead to some animals not getting all the nutrients they need. The latest development and new generation of multi-mineral products is B-Traxim All-in-1. Using Pancosma's Iso-Fusion technology (IFT), every particle contains exactly the same ratio of each different mineral, (Figure1) resulting in perfectly uniform distribution and homogenous premix and feed.

The four different minerals in one of B-Traxim All-in-1 products were identified using Scanning Electron Microscopy together with Energy Dispersive X-ray Spectroscopy (SEM-EDX) at the Swiss Centre for Electronics and Microtechnology (CSEM) in Neuchatel, Switzerland. These minerals (Cu, Fe, Mn, Zn) were identified and represented with four different colors. Figure1 shows that not only are all four metals present in every particle, but they are very evenly distributed throughout each one. In the end, the final user is looking



(Figure1)

for a way to provide nutrients homogenously and positively impact animal uniformity, performance and products. A series of tests based on the coefficient of variation confirmed a much lower deviation to the mean with All-in-1 products compared to traditional blends (figure2).

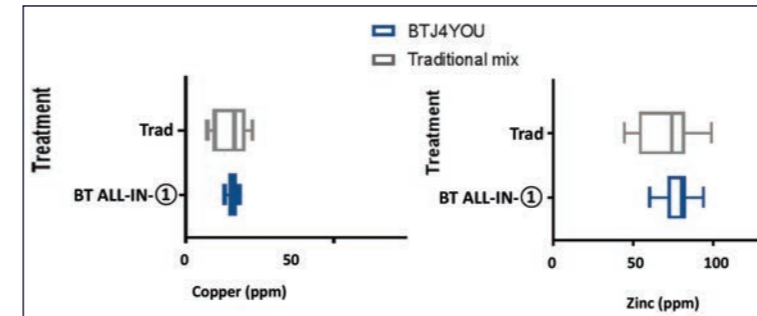
## Multi-mineral benefits

Multi-mineral products can also facilitate the day-to-day work of feed mills and on-farm mixers. Having all the necessary minerals in one or more concentrated formulas reduces the number of silos and stocks on site. Plus, administratively, there are fewer orders and registrations to keep track of.

B-TRAXIM PRO4 is an All-in-1 solution containing Zn, Mn, Cu and Co, designed to meet ruminants' needs.

It is based on PANCOSMA's well-known glycinate technology that provides higher bioavailability and support to physiological functions compared to sulfate.

Three separate studies provide conclusive proof of PRO4 effectiveness in ruminant production. First, a study



(Figure2)

Coefficient of variation (%)	Copper	Zinc
B-TRAXIM All-in-1	10.83	11.43
Traditional mix	39.36	24.05

carried out at North Carolina State University focusing on the bioavailability of minerals in ruminants (Spears et al. 2004) showed that apparent absorption and retention of Zn and liver zinc concentration were higher for steers

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supplemented with organic trace minerals than for animals fed zinc sulphate or another organic source. In another study comparing the organic zinc source to zinc sulphate, North Carolina State University concluded that the organic form had a positive effect on immune parameters (Fry et al. (2009).

Lastly, a study in Spain investigated vitamin B12 synthesis by microorganism in rumen. Cobalt is a key component of this synthesis and therefore needs to be supplemented and

available in the rumen. Compared to sulfate, the study showed a significantly greater formation of B12 in the rumen by the rumen microbial population supplemented with PRO 4.

Precision feeding is a hassle-free approach to consistently providing ruminants with the nutrients they need—no more, no less. An effective way to improve performance while reducing waste, it's good for the animals, good for the environment and good for production.

The B-TRAXIM range of essential mineral solutions is based on glycine, and relies on a unique transversal approach, combining technology, chemistry and nutrition. Scientifically validated and supported by numerous publications, B-TRAXIM products have proven to be highly stable and effective in a variety of species and conditions, while establishing themselves as a reference in the field of organic trace minerals.

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