



## **Animal Health & Nutrition Specialists!**

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### **How much protein do my cattle need?**

How much protein cattle require depends on a number of variables. The weight and condition of the cattle, the production expected from them and their physiological state, that is pregnancy or lactation. The amount of protein available in the grass varies throughout the year and this affects the amount required to be supplemented. The ability to use non protein nitrogen (NPN), such as urea or Liquid Nitrogen to create true protein in the rumen is a special feature of ruminants that is invaluable in supplementation.

Non protein nitrogen supplements provide ammonia to the rumen microbes which these microbes use to create proteins. By making this ammonia available the microbe population increases and so feed is digested faster. As cattle on forage diets are generally limited in intake by rumen fill then NPN supplements can increase the total intake of feed. As the microbes pass out of the rumen they are digested and supply the beast with protein. NPN supplements increase the total amount of protein being supplied to the fourth stomach and so the beast has more protein. So there are two factors working together to increase production from non protein nitrogen supplements, that is increased intake and increased protein supply.

Feeding excessive levels of urea can be wasteful in that ammonia that is not utilised in the rumen passes into the blood stream and circulates to the liver where it is detoxified back to urea. This process costs the beast energy. Much of this urea is then passed out in the urine and therefore wasted. A quantity is recycled back through the salivary glands and into the rumen. The efficiency of recycling increases with lower protein availability. Excessive levels of ammonia can also cause toxicity.

The requirements for a breeding cow vary from 6.9% protein for a dry cow in early pregnancy up to 12.9% in peak lactation. Requirements for growing cattle vary with size and rate of gain. Larger cattle generally require a lower percentage protein for the same rate of gain than smaller cattle. Requirements vary from 7.6% protein for 500kg steers putting on 0.2kg per head per day up to 14.2% for weaners putting on a kilogram per head per day. Cattle are quite adaptable to changes in requirement for protein when supplements are available. Cattle with higher demand tend to eat more supplement and so increase their protein intake.

The amount of urea that a beast can utilise varies considerably. The amount and availability of energy in the diet, the amount of rumen degradable protein and the requirements for protein all affect the amount of urea that can be utilised. The range that can be utilised is generally in the range between 20 grams and 80 grams. Most supplements provide urea in this range with the exception of M8U that provides far too much urea. The extra urea in M8U is put in to control intake not as a non protein nitrogen source.

Feeding the correct amount of protein and urea is vital to maximize production on dry and mature pastures. Knowing the amount of protein required and what is being supplied can help in supplement management decisions without forgetting that we need to supplement both the rumen microbes and the protein requirements of the beast.