

Nitrogen Nutrition of Cattle in the Southern NT (Part 2. Supplementary Feeding)

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Pasture protein levels in the Southern NT often fall below those required by stock to maintain weight (as described in Agnote No 599, J59). During these times providing supplementary nitrogen can improve production.

WHY FEED NITROGEN?

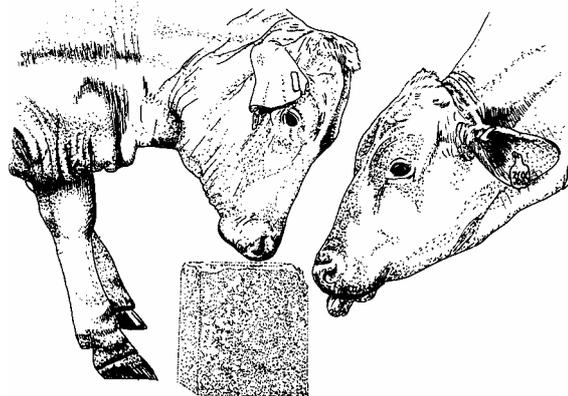
When adequate low quality roughage is available, providing supplementary nitrogen improves the ability of cattle to utilise this roughage. With improved feed utilisation come the benefits of improved animal performance. Better weight gains are achievable by dry stock. Breeders lose less weight and are able to maintain a better body condition and reproductive performance.

TYPES OF NITROGEN SUPPLEMENTS

Nitrogen deficient diets can be supplemented in two ways: with protein nitrogen or non-protein nitrogen (NPN).

Protein nitrogen supplements are usually vegetable by-products such as cottonseed meal. Other sources include high protein (generally legume) hay such as lucerne.

NPN sources are agricultural fertilisers such as urea, mono-ammonium phosphate (MAP), di-ammonium phosphate (DAP) and sulphate of ammonia.



NPN UTILISATION BY CATTLE

Rumen microbes use NPN to make protein. Microbial activity in the rumen increases, increasing the rate of feed breakdown and thus increasing intake.

NPN is cheaper per unit of nitrogen to feed than protein nitrogen. Of the NPN sources, urea has the highest nitrogen content and is the cheapest per unit of nitrogen. However, urea provides nitrogen only and is potentially toxic. Cattle must be introduced to urea containing supplements gradually. This allows the populations of rumen microbes capable of utilising urea time to build up.

MEANS OF PROVIDING SUPPLEMENTARY NITROGEN

There are three ways of providing supplementary nitrogen to stock. These are:

- i. proprietary blocks;
- ii. loose mixes; and
- iii. water medication

DRY SUPPLEMENTS

Palatability of dry supplements varies depending on supplement composition, water quality and the prior experience of cattle with supplements.

Most proprietary blocks and loose mixes use urea as the major source of nitrogen. The risk of urea poisoning is greatest after rain because dissolved urea can concentrate in pools of water. This can occur in the depression caused by cattle licking the middle of the supplement and/or the depression worn around the supplement by feeding stock. Poisoning occurs when stock drink this water or lick excess of the softened supplement. Most problems can be avoided by drilling drain holes and occasionally moving supplements and turning blocks over.

Providing safe limits for urea content of supplements is difficult. Cattle can tolerate more urea than they can utilise if they are built up to it slowly. About 35 g of urea per day is sufficient for substantial production response from breeders weighing around 400 kg. Up to 20 g per head per day is sufficient for weaners. However, providing a fixed amount of supplement per head per day is not possible in extensive situations so these intake quantities can only be used as guides.

PROPRIETARY BLOCKS

Proprietary blocks vary in price, nitrogen content, palatability and how well they hold together. The relative merits of the various commercially available blocks depend on these factors. Many proprietary blocks use salt as both an attractant and an intake regulator. Blocks are a convenient supplement because they usually require little labour input.

Nitrogen sources are no longer inexpensive when compared to phosphorus sources. However prices of blocks should still be related to their phosphorus content. If it is known that a high phosphorus content is not needed then savings in the cost of blocks can be made. Many blocks high in nitrogen and low in phosphorus content are labelled "Dry Feed Block".

LOOSE MIXES

Loose mixes are homemade supplements that usually have salt as both an attractant and intake regulator. Urea is usually the main source of nitrogen. Loose mixes are generally cheaper than proprietary blocks but need time and labour. Loose mixes can be formulated to meet the needs of the situation. They can be formed into a block by adding a small amount of watered down molasses or around five percent cement or agricultural lime.

WATER MEDICATION

Water medication will ultimately be the most efficient means of providing supplementary nitrogen and other nutrients to stock using fixed water points. Intake is proportional to requirements since larger stock drink more than smaller ones and wet cows drink more than dry cows. Problems with shy feeders are overcome since all stock must drink. Also, strong and dominant animals do not consume excess at the expense of other stock more in need of the supplement.

THE LINK BETWEEN NITROGEN AND SULFUR

In considering supplementation with nitrogen it is also necessary to consider the requirement for sulfur. Protein sources of nitrogen will also contain sulfur but urea does not. If a nitrogen deficiency is corrected with urea rather than with a protein supplement, sulfur can become the primary limiting nutrient. It is needed at a ratio to nitrogen of 1:15 and sulphur-containing chemicals may be included in supplements for further improvement of production.

For further information on supplementation please contact the DPIFM office in your region.

Please visit us on our website at www.primaryindustry.nt.gov.au

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