

Lick supplements for ruminants in perspective

By André Bezuidenhout (Pr.Sci.Nat), Feedtek

The use of licks as supplementary feed for ruminants is commonplace, especially where livestock is farmed extensively. Grazing quality and quantity are dependent on the climate and seasons, and therefore vary throughout the year.

Changing nutritional composition

Mature grazing will start to seed towards the end of the growing season, which means plants become more fibrous while protein content decreases. The more fibre the pasture contains, the less digestible it is, leading to a loss in condition and bodyweight. Veld will differ in terms of its nutritional value and palatability over different seasons. This has a major impact on animal production outcomes and the type of lick supplements used.

Severe drought conditions can also reduce the digestible roughage content of veld grazing. Where this is the case, the animals should receive roughage in addition to lick supplements.

These changes lead to nutrient deficiencies and unbalanced nutrition, and are the main reasons behind substandard production and reproduction. It is possible, however, to improve the utilisation and digestion of dry and relatively poor-quality veld by giving animals the necessary supplements.

Impact of quality on utilisation

It becomes difficult for rumen microbes to digest fibre if the protein content of veld grazing (especially grassland) drops below 6% and digestibility below 50%. Protein deficiency leads to microbial die-off and then to a drastic reduction in dry matter intake, because the animals' rumens are full of undigested grass.

To boost the utilisation of low-quality grazing and increase animals'

performance on it, these microbes must receive certain key nutrients to facilitate digestion and grazing intake.

Under such conditions, it is essential to provide additional protein in the form of non-protein nitrogen (e.g. urea) to microbes – this will help maintain their numbers. Energy and sulphur are indispensable for the efficient utilisation of non-protein nitrogen (NPN). Microbes digest fibre, thus providing energy to the animal. Microbial die-off also serves as an important source of protein.

Creating favourable rumen conditions that will support microbial growth therefore plays a decisive role in successful lick supplementation.

Other role-players

Phosphate deficiency will suppress grazing intake, while cattle fed a phosphate supplement often tend to graze less selectively. Research has shown that sheep are less susceptible to a phosphate deficiency due to the differences between the feeding habits of sheep and cattle. Sheep are highly selective grazers. Some grazing studies have shown sheep to suffer a protein deficiency before phosphate becomes limiting. However, the fact that sheep are farmed more intensively means that phosphate supplementation is becoming indispensable.

In addition to forming part of the bone structure, phosphate plays a key role in energy metabolism and pH regulation. Deficiencies result in impaired fibre digestion and intake, giving rise to slowed growth and poor reproduction, among other things.

Metabolic processes, health and fertility rely on macro- and micro-minerals as well as vitamins. Its balanced inclusion is essential for sustained high levels of production and reproduction.

Veld that lacks available roughage cannot be supplemented with a lick and is often the reason for excessively high lick

intakes. To correct this deficiency, extra roughage must be provided separately.

Reproduction and intake

Successful reproduction depends mainly on the correct, balanced supply of nutrients during critical periods in the reproductive cycle. A lactating ewe or cow requires approximately three times more protein and energy than non-pregnant females. Multiple offspring have a major effect on nutrient requirements.

During late gestation and lactation, ewes with multiple offspring require approximately 50% more nutrients than their single offspring counterparts. Supplementing bypass protein during late gestation and lactation is crucial in particularly sheep, to ensure adequate milk production; it also benefits growing young animals.

Veld grazing on its own cannot meet all the requirements for optimal disease resistance, growth and fertility. It is therefore necessary to boost animal production by providing a strategic lick supplement.

Due to the varying levels of lick ingested, it is not always possible for animals to perform optimally. Research has shown that up to approximately 15% of sheep in a flock fail to ingest any lick, especially if it is a maintenance lick given at low levels.

Factors such as feeding space, palatability and previous experience have an important influence on the amount of lick animals in a herd or flock ingest.

Production and reproduction

Research focussing on cattle has shown that calving and weaning percentages were 10,3 and 7,3% higher, respectively, when phosphate supplementation was compared to salt supplementation only. However, a protein-energy-mineral supplement alternated with a phosphate supplement (compared to salt only)

resulted in a 38,9 and 19,7% higher calving and weaning percentage, respectively.

Other research results showed that phosphate supplementation increased calf weaning weights by 16 to 27,5%. Furthermore, cows with poor condition during the mating season had a 20% lower conception rate.

Types of licks

On actively growing green grazing that contains enough protein and energy, phosphate is the first limiting nutrient, especially during the non-pregnant and early pregnant phases in breeding animals. Mineral licks containing phosphate and other minerals can then be supplied. If the physiological stage (late gestation or lactation) of breeding animals or condition of animals necessitates it, producers can provide a mineral maintenance, mineral production or energy lick that contains energy and protein, especially bypass protein.

Once the quality of green grazing starts to deteriorate during autumn in the summer rainfall regions, moderate

amounts of protein, energy, phosphate and other minerals must be supplied by way of transition licks. These types of licks can be classified as maintenance, production or energy licks, depending on the animals' condition and growth or physiological stage.

Once the dry period arrives, protein is usually the first limiting nutrient that must be supplemented, along with phosphate and other minerals. In addition, dry grazing often contains insufficient amounts of rapidly available energy that, together with protein, is essential for successful conversion into microbial protein.

A protein lick, or winter/dry-season maintenance lick, is usually given at the start of the dry season when grazing is still sufficient. As the dry season progresses, digestible material becomes scarcer and more energy is required, especially before calving, or lambing when the physiological demands placed on animals are greater. In this instance, a winter production or energy lick is the go-to lick that will supply more nutrients.

There is often a mix of dry veld and new actively growing green plants after the first spring rains. A lick supplement in the form of a transition lick (containing less NPN than winter licks) should be given.

Reproduction considerations

Besides the type of veld and its condition, breeding animals' physiological stage and condition have an important influence on the type of lick supplement chosen. Changes in bodyweight and condition are a key indicator of veld condition and whether the specific type of lick supplement is sufficient to meet current production and/or reproduction requirements.

Enough veld grazing/roughage must be available throughout, as no lick supplement is able to replace it. Giving creep feed to lambs and calves prior to weaning can significantly reduce lactating ewes and cows' need for lick supplementation. **SF**

For more information, email
André Bezuidenhout at
andre@feedtek.co.za.



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