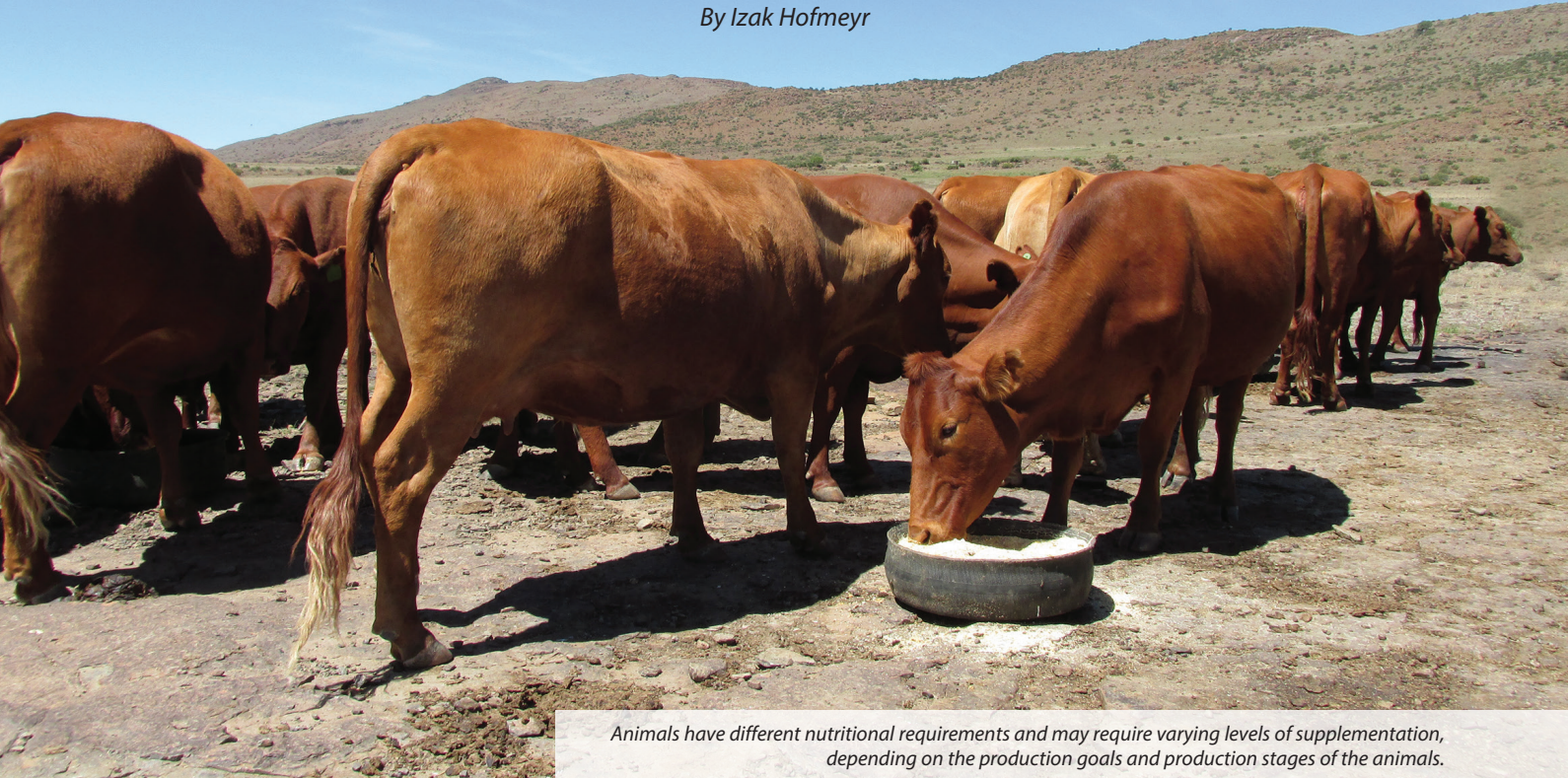


The philosophy behind purpose-driven animal nutrition

By Izak Hofmeyr



Animals have different nutritional requirements and may require varying levels of supplementation, depending on the production goals and production stages of the animals.

Several factors play a role in the nutritional needs of animals, including its bodyweight at a given time, the physiological or production stage it is in, the production or reproduction target, condition, environmental conditions and the management system applied.

It is therefore evident, says Alheit du Toit, livestock specialist at Feedtek in Cradock, that livestock have varying nutritional needs and that the feed regime must be constantly adjusted to ensure optimal performance. The level of performance is linked to the goals of the producer and should be viewed in the context of the specific management system. This, in turn, is closely linked to the resources available on a specific farm.

"I regard meticulous production planning, based on the available resources, and a carefully planned nutrition strategy that fits in with the optimal utilisation of these resources as key to achieving these goals. Producers should never lose sight

of the fact that we are first and foremost grass farmers and that the animal is merely a vehicle used to convert veld into a marketable, high-quality product.

"Producers should use strategic supplementary nutrition to produce the most kilograms of product per hectare at the highest profit margin," he says.

Supplementation on pasture

Given this background, if you consider the nutritional needs of a specific animal at a given time, it amounts to a combination of the aforementioned factors and the daily feed intake of the animal.

If you take the available veld grazing in extensive farming systems as the point of departure in your recommendation regarding the correct nutritional approach, then the first aspect to keep track of is the variability of veld quality given the season, rainfall, location, soil type, growth rate, species composition, physiological stage of the veld and grazing pressure. In the case of cultivated pastures, fertiliser application also plays a role.

The rumen of the animal should always be considered first, he emphasises. It is all about the requirements and optimal functioning of the microbial population in the rumen, and this is exactly where supplementary nutrition comes into play.

A typical situation that needs to be managed involves protein – although the grazing may have enough protein, it could be energy deficient at times. Mature veld that reaches dormancy (winter phase inland, while the Western Cape and coastal regions enter their green season in winter) poses a challenge in that sufficient protein must still be available for the microbes so they can break down the more difficult-to-digest fibre.

"The point is that livestock need a basic level of certain nutrients throughout, and if there is a deficiency in the veld, it must be supplemented. This becomes even more important if our aim is higher production levels."

However, nutrition also has a long-term effect on production, which complicates matters somewhat, he warns. "The

nutrition the animal receives today has a direct effect on its future production. For example, while a ewe is suckling her lambs, her ova are already starting to develop for the next ovulation period."

Nutrition and wastage

For a successful purpose-driven approach in which animals consume the right nutrients for each production stage, two questions need to be answered, says Alheit. Firstly, you need to know what the animals need right now, and secondly what production level they need to maintain – not only now, but also in future.

"Purpose-driven nutrition, in my opinion, must be implemented according to a strategic plan. You need to determine what you want to achieve, and then you need to look at the resources (e.g. raw materials or grazing) at your disposal and how you can use them optimally. This way, you will know which supplementary nutrition to provide at a specific time to supplement any deficiencies and imbalances in the veld, and achieve your goals."

Wastage, on the other hand, is when an arbitrary approach is taken to supplementary nutrition. One example of wastage, says Alheit, is when you keep your extensive sheep flock, which lambs only once a year and does not yield a high percentage of twins, on a high level of supplementary nutrition.

"Pasture that is high in protein but does not provide much in terms of energy

is another form of wastage. This results in animals not utilising the grazing optimally, with a large percentage of the available protein that is broken down and excreted as nitrogen. If you adjust the energy supply to make better use of the protein, overall feed utilisation will improve drastically, meaning less wastage."

Another aspect that should not be overlooked, he says, is the role that macro- and micro-minerals play in converting available raw materials into useful nutrients. This is also essential for fertility and health.

Supplementary vs complete diet

A complete diet is normally associated with intensive production systems in which animals receive a balanced ration in line with the production or reproduction goals set for those animals.

When giving supplementary nutrition, on the other hand, you are supplementing the feed components in a roughage source (typically veld or cultivated pastures) that lacks these components, so as to correct imbalances and improve utilisation.

"It is not quite as simple, of course, because lower-volume lick concentrates ingested at levels lower than around 0,5% of bodyweight can have a very positive effect on the voluntary intake and digestibility of the roughage. The equation is therefore a bit more complicated than adding A and B to get C. Hence, the cumulative positive effect on total nutrient intake is greater than expected."

All classes of animals may require supplementary nutrition to a greater or lesser extent, depending on the production goals set for them.

"Supplementary nutrition shows the highest direct return on investment in a few key classes of animals, including growing young animals, female animals prior to and during breeding, and animals in late gestation and early lactation. Classes that require little or no supplementary nutrition are mature oxen or wethers on good grazing. With wethers, however, you need to keep an eye on wool growth."

Production stages

The class of animals with the lowest nutritional needs are dry females that have yet to conceive. The next class is those that need to get ready for conception. To improve their body condition, they will require more nutrition. The nutritional requirements of the next

group – female animals in early and mid-gestation – are even higher.

This is followed by the group in late gestation – foetal growth peaks during the last trimester, which significantly increases the animal's nutrient requirements. This group faces the added challenge of having to cope with reduced intake potential, as growing fetuses will put pressure on the available space, thus reducing the volume of feed that can be ingested daily. This increases the need for concentrated supplementary nutrition.

Early lactation is the next level of increased nutritional requirements. A ewe in early lactation with twins may need as much as two and a half times the protein, and one and a half to two times the digestible energy that a dry ewe would require.

Note, however, that animals in early lactation often use the reserves they have built up during gestation. These ewes must not use their body reserves as it can lead to a lower condition score, a situation that must be avoided at all costs. This will also hamper re-conception.

During mid- and late lactation, animals' nutritional requirements start to decrease as the calf or lamb begins to ingest feed. The goal here is to achieve and maintain optimal body condition for the next breeding season.

Young and breeding animals

The nutritional needs of growing young animals are similar to that of animals in mid- to late gestation. Protein helps with frame development and energy to convert the protein into muscle tissue. Trace elements, macro-minerals and vitamins also play a vital role in this group.

Male breeding animals should also receive attention. Testes and sperm development require excellent nutrition which must be fed for a long enough period before the start of the breeding season. In this regard, top-quality nutrition and the right mineral balance will be the deciding factors.

Do bear in mind, however, the law of diminishing returns, he concludes. Because of the number of variables involved, there will be a constant shift in the sweet spot of maximum return on investment, given fluctuating input and product prices. **SF**



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