

IS THE NGUNI ADAPTED TO LOW QUALITY PASTURES?

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Tropical and subtropical climates have both direct and indirect effects on livestock. Direct effects include high temperatures, solar radiation, humidity and wind. Digestibility, intake, quality and quantity of pastures, pests and diseases are all indirect effects. Nutritional stress is probably the most important indirect factor⁽¹⁾.

Natural pastures in the tropics and sub-tropics have both a lower nutritional value and tiller (leaf) density than in the temperate areas. The tropical grasses (C-4) have developed different photosynthetic pathways to adapt to the climate. The C-4 refers to a 4 carbon compound in comparison to a 3 carbon compound of grasses from temperate areas⁽²⁾. C-4 plants have high photosynthetic rates, which is further stimulated by high light intensity. The result is stems with a high fibre content and low leaf to stem ratios, which limits both intake and digestibility⁽³⁾. The quality of the natural pasture also rapidly decreases through summer, which results in lower energy and nitrogen (N) availability.

A nitrogen (N) deficient diet reduces feed intake by limiting microbial growth rate and organic matter digestion in the rumen⁽⁴⁾. This in turn reduces the amount of amino acids available for digestion and absorption from the small intestines. The optimum level of ammonia (NH₃) in

the rumen of cattle for proper microbial activity seems to be 50 mgℓ⁻¹ (5). An improved N recycling back to the rumen and thus higher rumen NH₃ levels will improve microbial growth, organic matter digestion, and the flow of amino acids to the small intestines, reducing the N requirement on low quality pastures.

It is possible that an animal breed or type have developed different nutrient requirements due to natural selection. It was therefore of interest to observe that Nguni cattle were more capable of maintaining their body weight during winter, and that these animals had higher blood urea (N) and ruminal NH₃ levels⁽⁵⁾. The results are given in the Table below. It is interesting to note that the Nguni maintained a NH₃ level of 45 mgℓ⁻¹ during winter, which is slightly below the optimum level of 50 mgℓ⁻¹.

Breed	Urea (mmol. ℓ ⁻¹)	Ammonia (mg. ℓ ⁻¹)
Nguni	3.38	45.19
Bonsmara	2.36	24.64
Hereford	1.51	14.92

Due to the increase in cost of winter feeding, it may be the opportunity to look at improving animal productivity by choosing the best genotype for each environment. It is therefore important that we should increase our knowledge of our indigenous and locally adapted breeds, and their capability for production under local conditions.

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