

GRAZING BEHAVIOR AND MOVING ACTIVITIES OF THE NGUNI

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The grazing and movement behavior of young Afrikaner, Nguni and Simmentaler bulls were monitored under extensive subtropical conditions. In winter all bulls lost weight, with the Simmentaler losing the most and the Nguni the least. The Nguni laid down more and grazed less during winter to conserve energy. During early summer all breeds were more active. The Simmentaler made more use of shade, whereas both the Afrikaner and Simmentaler walked more than the Nguni during early summer. Nguni bulls grazed while they walk and this behavior appears to lower energy expenditure compared to the other breeds.

Izindlela zokudla kanye nokuhamba kwezinkunzi ezintsha zama Afrikaner, amaNguni kanye nama Simmentaler kumadlelo asendle asezindaweni ezifudumileyo sekuke kwahlolwa. Izinkunzi zonke zabonakalisa ukonda ebusika, kanti inhlobo lamaSimmentaler londa kakhulu kunazonke, lalandelwa uhlobo lwama Nguni. Uhlobo lwamaNguni lona luchithe isikhathi esinengi lilele bese lapho lidla khona luthole ukudla ukunganelisi. Kuthi lapho kungena khona intwasahlobo, zabonakala zonke izinkunzi zihlambuluka (zikhombisa umdlandla). Uhlobo lwamaSimmentaler lona labonakalisa luthanda kakhulu ukuhlala emthunzini, luphinde lona nama Afrikaner, luthande ukuhamba kakhulu kundlula uhlobo lwamaNguni ngesikhathi sentwasahlobo. Izinkunzi zenhlobo yamaNguni zona zithanda ukuhamba zidla okusiza ukungezelela amandla kunezinye izinhlobo zezinkunzi.

Cattle production in Sub-Saharan Africa, particularly the subtropics is fraught with nutritional and environmental constraints. In subtropical climates high temperatures, solar radiation, intake and limited water availability directly affect the animal, whereas digestibility, quality and quantity of pasture, parasites and disease have indirect effects (Linington, 1990). Indigenous cattle breeds (eg. Nguni and Afrikaner) have been exposed to these conditions for centuries and it appears that through adaptation, these animals have developed mechanisms to cope with the negative environmental and nutritional stresses of the region (Ramsay, 1985).

Scholtz & Lombard (1984) observed that Nguni cattle were more capable of maintaining their body weight during winter than exotic breeds, which may imply better nitrogen (N) balance. A positive nitrogen balance would limit the severity of poor winter forage on nitrogen depletion. This positive N balance can be attained through either more efficient use of consumed N or consumption of more N. The consumption of more N may suggest behavioral differences between the breeds, which would either result in consumption of more material or a selection of better quality material or of attaining more N

in a different manner. However, the kidney may also play a role by reducing urinary nitrogen excretion.

These and other results caused Linington (1990) to suggest that Nguni cattle may have developed adaptive mechanisms to limit weight loss during winter, thus decreasing the necessity for expensive winter protein supplement and that more use should be made of these breeds under extensive production conditions.

There is, however, a paucity of data on the efficiency of different cattle breeds to perform under extensive conditions. Data generated under housed conditions does not take into account differences that might occur as a consequence of different grazing behaviors.

The ARC therefore initiated a project to study the grazing behavior and moving activities of three different breeds (Osler, 1996). The breeds involved were the Afrikaner, Nguni and Simmentaler. Fifteen young bulls from each breed were involved in the study and their behavior and movement were studied over a period of one year, commencing in March.

Field work was conducted at the Roodeplaat Experimental Farm situated approximately 30 km north-east of Pretoria. The vegetation of the Experimental Farm can be classified as sourish mixed bushveld (Acocks, 1988). Acacia caffra is the dominant tree in this rather open savanna whilst Cymbopogon plurinodes, Elionurus muticus, Hyparrhenia hirta and Themeda triandra dominates the dense stands of tall grass veld.

The Simmentaler preferred to rest in the shade far more than the other two breeds during the day, but compensated for the lesser time spent grazing during the day, by spending more time grazing during night and at other cooler times of the day. Thus, the Simmentalers appear to suffer from heat stress and shifted their behavioural patterns to the shade during summer. The Afrikaner bulls spent more time grazing during the day than the Nguni and Simmentaler bulls which may, perhaps, be the result of the Afrikaner being more selective, thus taking more time to reach rumen fill.

The sole source of feed during the study period was natural forage with no supplements. During winter the available feed was of poor quality and inadequate for cattle production, and all the breeds lost weight. The Simmentalers lost 78% of the weight they gained in late summer compared to the 52% of the Afrikaners and 31% of the Ngunis. This demonstrates that indigenous cattle performed better during the winter period, having a lower weight loss.

In the present trial Ngunis appeared to alter their behaviour in winter to improve their energy economy during a time of poor nutrition and

weight loss. The Nguni bulls rested longer and walked to the water trough only once per day during midday, thereby decreasing their energy expenditure. During winter Ngunis laid down more and grazed less compared to the other breeds, whereas the Afrikaner and Simmentaler bulls did not appear to alter their behaviour to reduce energy expenditure.

Both the Afrikaner and Simmentaler bulls were losing more weight than the Nguni bulls, which resulted in a higher nutritional requirement, forcing them to feed more in order to meet their nutritional needs. The Nguni bulls seemed to be able to graze enough during the day so as to limit grazing at night. This may be an indication that the Ngunis are non-selective grazers.

If the time spent walking and the distances walked are considered together, it becomes apparent that the Ngunis walked slower, thereby conserving energy. It was further observed that the Ngunis tended to walk and graze simultaneously, i.e. these activities were combined into one, thereby economizing energy expenditure. This may also be indicative of a non-selective grazing pattern.

The Simmentaler bulls were less active than the other breeds, spending only 3% of their time walking compared to the 6% of the others. Immediately after green forage became available, the behavior of the Nguni bulls altered their behavior to maximize intake as energy conservation became irrelevant, whereas the Simmentaler bulls still displayed the same behaviour pattern as in the previous two seasons (late summer and winter).

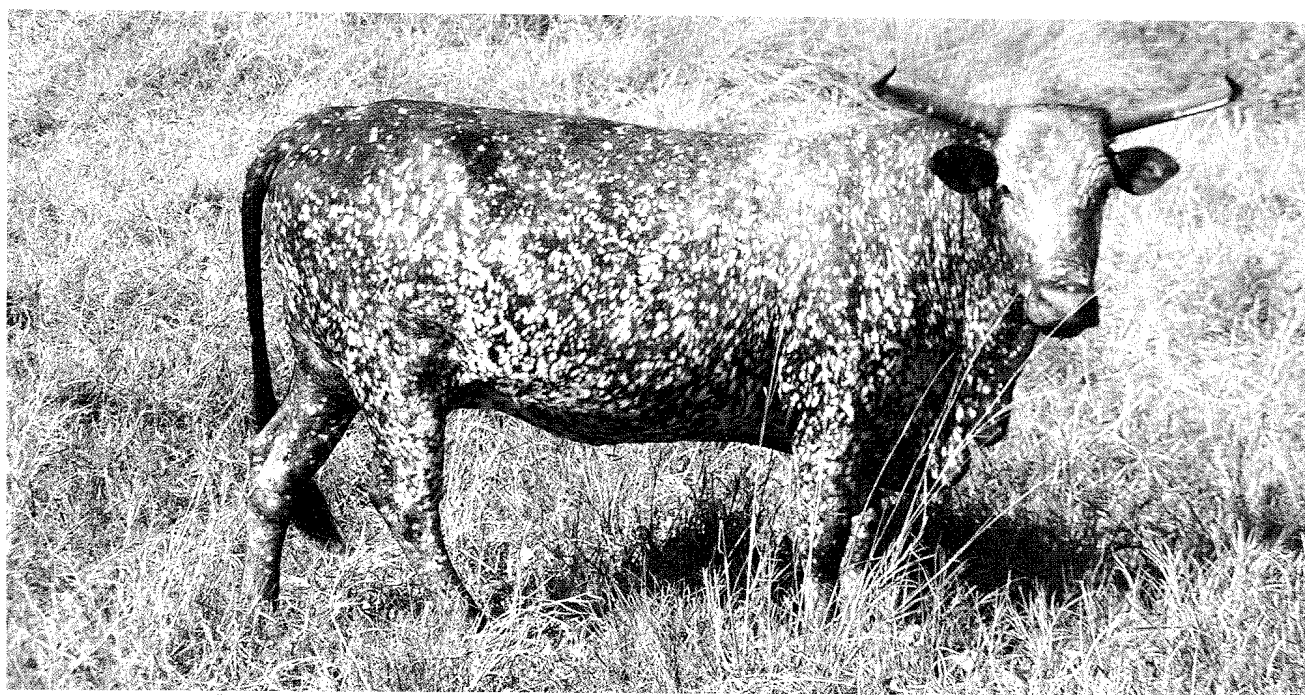
In conclusion, the Nguni bulls appear to limit weight loss in winter by altering their behavior patterns to reduce energy expenditure, whereas the Simmentaler maintained the same behavior patterns as in other seasons. The Nguni bulls most probably consumed more food (energy and nitrogen) during winter since they were grazing while they walked. Furthermore, they probably conserved more energy by walking slower and resting longer than the other two breeds.

The bite of ticks can be painful and annoying and usually elicits a response from the host. Grooming behavior in response to ecto parasite annoyance is an important method of protection used by cattle. The animals were seen taking soil-baths, specifically the Ngunis. None were recorded for the Afrikaner, whereas only one was recorded for the Simmentalers. The Simmentalers were also making more use of the shade to lie and stand in. This behavior of the Simmentalers only increased the changes of tick infestation.

During the study it was observed that the Nguni bulls were not just sniffing as the other animals are urinating, but that they were physically drinking the urine, with the swallowing actions of the throat visible. This would result in higher plasma urea levels, which in turn may have a beneficial effect on intake and fermentation, by preventing a decrease in rumen ammonia concentrations. It is therefore possible that the higher blood urea and rumen ammonia levels that are found in the Nguni can partly result from this behavior pattern, which could have contributed to the lower weight loss in winter by increasing nitrogen availability.

REFERENCES

- Acocks J P H, 1988. Veld types of South Africa. Mem. Bot. Surv. S. Afr., 40: 1-128.
- Linington M J, 1990. The role of Sanga cattle in the beef industry. In: Recent advances in ruminant nutrition, Tech. Com. No. 223, Dep. Agric., 31-38.
- Osler E H, 1996. Circadian activity patterns of Afrikaner, Nguni and Simmentaler cattle under extensive veld conditions in the southern Transvaal, South Africa. M.Sc. University of the Orange Free State.
- Ramsay K A, 1985. The Nguni and its future. Lecture at Annual Nguni Production sale.
- Scholtz M M & Lombard P E, 1984. Nguni research. Genetic research and indigenous breeds exhibition. 2nd Wrlld Cong. Sheep beef Cattle Breed, Pretoria.



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