

# NGUNI CATTLE

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Climate change in Southern Africa as in other parts of the world is a reality. Summer temperatures are gradually increasing with more erratic rainfall patterns. In the eastern coastal regions high temperatures with humidity result in disease carrying ticks which make it uncomfortable for exotic Taurus breeds to survive. In Brazil with its high tropical humidity and temperatures the Indicus breeds are important for adaptation purposes. However, they do not have the meat quality of the Nguni that customers require.

**The Nguni breed of cattle has acclimatised over centuries in high temperature areas that are dry or with high humidity and have the ability to perform under these conditions. Breeders need to keep these facts in mind and introduce the Nguni timeously into their breeding programs.** Certain adaptation traits of importance:

## • Temperature regulation

The average body temperature of the Nguni is 38.7°C. Bos Taurus breeds of cattle have a comfort zone of -10°C to 16°C and Bos

Indicus breeds from 10°C to 27°C (Brody, 1956). Sweating of cattle commences at 25°C. Feed intake declines after 27°C unless the adaptation traits are favourable. Holstein feed intake declined 20% at 32°C and virtually ceased at 40°C.

A rise of 0.5°C in body temperature will depress feed intake and increase respiration rate. The quick acting adaptation traits of the Nguni balance any heat produced in the body with an efficient mechanism of heat loss. If an animal can perform in a warm environment the adaptation mechanisms are sound. Traits of importance in body temperature regulation are the following:

## • Respiration

The normal respiration rate of cattle is 26-28 pants per minute. If animals experience difficulty in dissipating heat an increase in respiration rate occurs. At Mara Research Centre a group of young bulls were subjected to a veld growth test. Temperature and respiration rates of each animal were measured after a fast walk of 2km to the crush. The day temperature was 34°C. The results are presented in Table 1.

**If respiration rate is accepted as a measure of adaptability to a warm environment the Nguni was 31.9% better adapted than the exotic breeds at Mara.**

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**Table 1: Body temperature and respiration rates of different breeds**

Breed	Body Temperature (°C)	Respiration rate / minute	Range (rate / min)
Nguni	39.4	47	26-74
Drakensberger	39.3	55	34-80
Bonsmara	39.7	60	34-84
Taurus Breeds	39.6	62	36-94
% Difference	0.8%	31.9%	361.5%

# READY FOR CLIMATE CHANGE

## • Coat

Coat types play an important role in adaptability and thermoregulation. **The Nguni carries a very smooth shiny coat that reflects the ultra-violet sun rays effectively, keeping body temperature normal.** If the coat of the Nguni is brushed by hand it leaves an oily substance that effectively reflects the sun rays. The oily substance is lacking in a dull coat.

## TICK AND PARASITE RESISTANCE

Tick biting flies and other parasite infestation in the warmer tropics and sub-tropics causes much irritation and discomfort to livestock and are the cause of diseases.

**The Nguni has a tough mobile hide that is a reliable asset in making an animal tick repellent. Animals with such hides become immune much more readily and succumb much less to tick borne diseases than thin hides and woolly coats.** At the Mara Research Centre indigenous cattle during summer carried only 8% of the counted ticks on an animal in comparison with the 92% of the British beef breeds.

An organism is present in ticks that convert some of the suckled blood to vitamin B which the tick needs to grow and develop. The immune system of the Nguni attacks this organism in the ticks. The ticks fall off quickly, lay fewer eggs (underdeveloped) and are not visible on Nguni cattle.

The effect of ticks on weaning weights of the calves of cows was investigated at Loskop for the Nguni, Bonsmara and Hereford breeds. One group of each breed was dipped and

one group was not dipped. The number of ticks on each animal was counted. On the Nguni was 431 ticks, the Bonsmara 2030 ticks and Hereford 3137 ticks. The loss of weaning weight between the dipped and non-dipped group for each breed was 4.4kg for the Nguni, 17.6kg for Bonsmara and 29.5kg for the Hereford.

**The advantageous resistance of the Nguni to ticks is evident.**

## BLOOD UREA AND RUMEN AMMONIA

Blood and rumen samples from Nguni, Bonsmara and Hereford heifers were collected on natural grazing at Loskop and analysed for urea and ammonia concentration. The results for blood urea were 3.4 mmol/L for Nguni, 2.4 for Bonsmara and 1.5 for the Hereford breed. The ammonia results were 45.2 mg/L for the Nguni, 24.6 for the Bonsmara and 14.9 for the Hereford breed. **These higher levels of urea in particular will enable the Nguni breed to maintain body condition better during winter.**

## SUMMARY

**The Nguni breed of cattle is one of the best adapted breeds of cattle to extensive grazing conditions, particularly in a high temperature, and or high humidity environment with an abundance of external parasites. The Nguni is an ideal breed for the climate change that is taking place.**

## • Skin

The skin and coat of an animal forms a buffer between the animal and the environment. Skin thickness measurements can therefore be taken as a measure of adaptability. The blood flows to the skin where dissipation of heat takes place. The larger skin area of the Nguni is therefore advantageous for heat dissipation. Indicus cattle have 12% more skin surface area than Taurus cattle. **The Nguni has a favourable larger skin area that favours heat dissipation.**

The Nguni skin has many sweat glands. It has been shown that indicus cattle have 1507 sweat glands per cm<sup>2</sup> compared to the 981 of Taurus cattle. The Nguni would have a similar number of sweat glands as the indicus breeds.