

# The Nguni - Pinnacle of an adapted breed?

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## **Introduction**

The term adaptation embodies many concepts, but perhaps the two most important aspects to consider are first, the ability of the animal to keep its body temperature constant under any circumstance and second, to reproduce regularly.

The first-mentioned is of utmost importance, for it is only when one has traveled abroad, that realization strikes the truth about how warm and unfriendly the South African climate and vegetation can be to livestock production. Midst in these varying and trying ecological array of factors stands the stockman, whose decisions in animal production play such a significant role that these decide the economic outcome of the farming enterprise. The second mentioned concept hardly needs further expansion; livestock scientists agree that the degree of fertility is indicative of the adaptation of the animal. A cow fully adapted to her surroundings, coupled with sound management practices, should be able to be highly reproductive throughout her lifetime. Unfortunately, all is not altogether as simple as stated above. Let us consider the following environment (climate and natural resources), animal and man interaction.

## **The environment**

In an article such as this, one is eager to directly progress to the beef female and its ability to come to grips with its main function of producing a saleable calf every year. But before this can come to pass, a thorough knowledge of the environment is inevitable. For too long, the stock owner has tried unsuccessfully to manipulate the animal to suit his needs, instead of giving a heap of thought to what the environment demands of the animal.

## **Environment-soil-vegetation-animal interaction**

The rainfall increases from the west to the east of the country. Higher rainfall (together with soil type) is generally associated with sourveld, the latter referring to the inability of the natural pasture (veld) to sustain the animal throughout the year. On the other hand, sweetveld generally occurs in lower rainfall areas, and has the ability to sustain the animal on natural vegetation throughout the year.

The significance of these differences to the animal is paramount. First, the anatomy of the animals on these two veld types is significant-

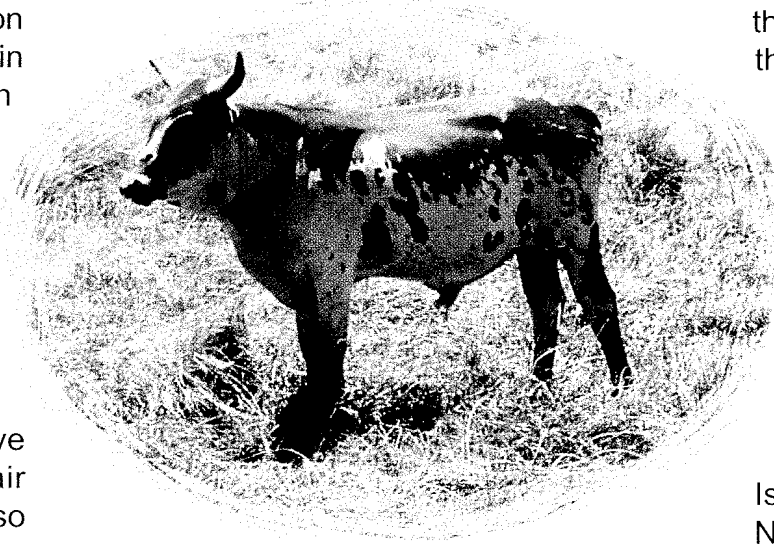
ly different. The sourveld is known for its long winters, the vegetation being significantly lower in quality than that of the sweetveld. Consequently, the type of animal to be found in these areas is of the metabolic type. It is compact, stocky, shorter on the leg and is block shaped. The reason for this appearance is for the animal to retain body heat as much as possible. On the other hand, the sweetveld is known for its long, hot summers, the natural vegetation being of a superior quality in the winter and summer. In contrast to the sourveld, the animal on the sweetveld generally now has to get rid of excess heat. Consequently, the anatomy resembles the respiratory type, the animal being long legged and narrower across the shoulders.

One has only to observe what happens in nature. The anatomy of antelope in the warm areas of the country has one very distinctive characteristic; the length of their limbs in comparison to the rest of their body. This ensures that the major heat producing organs such as the digestive system, heart, liver, lungs kidneys etc, are far away from the warm soil surface. Testes of bulls with short limbs in the tropics and subtropics will also be too close to the hot soil surface, which may

have a detrimental effect on sperm production and quality. It has been said that especially in areas denuded of plant material, more than half of the radiation heat that reaches the animal, is that which is reflected from the soil surface. The body area of an animal in the tropics and subtropics should thus be large in comparison to its body weight. This ensures that the maximum radiation from within the relatively large exposed body surface, takes place. Sheaths of bulls should also not be too short, and should have a rather larger and loose skin. A white hair coat with dark (black) pigmentation also helps to reflect the sun's rays. All this has one purpose, i.e. to get rid of excess body heat in the most economical energy and water saving manner possible.

In the drier, sweeter areas of the country, vegetation is sparser. In harmony of what is stated above, animals of the respiratory kind with long limbs also have to fulfill another important function, viz. to walk far distances in search of sufficient plant material. It is important that such animals have the ability to walk with ease. Ease of movement calls for animals with longer legs, and allows the animal to utilize less energy over a given distance, in comparison with animals having shorter legs.

From the foregoing it is clear that the stockman should take cognizance of the environment, and be aware of where cattle are purchased and where they are to be moved. The stockmen of age were adamant



*Remarkable ability to adapt. These photographs were taken in September 2000, after the Nguni bull and heifer calves were weaned from the sweetveld, and subsequently overwintered magnificently on the sourveld with its low nutritional content.*



that cattle could be moved from the east to the west of the country without the animals experiencing adaptation problems, but not vice versa. The most important answer lies in the principle that animals bred and reared on a lower plane of nutrition (sourveld), will excel on improved native pasture types (e.g. sweetveld), but the reverse is not true. One could thus say that animals bred on the sourveld are hardier than those on the sweetveld.

Is the above-mentioned also true of the Nguni? During the latter part of the 1990's, the author had no choice but to wean Nguni calves from the sweetveld to the sourveld during May each year. The pictures depict the body condition of a bull and a heifer calf during September, after having been weaned to the sourveld. They are examples of many heifer and bull calves which passed this test successfully year after year. This is a living testimony of the superb measure of adaptability and hardiness contained within the Nguni. One should bear in mind the stress of being weaned from the mother, as well as being relocated to a pasture having approximately half the protein content of the pasture on which it had been bred. Indeed, this is a remarkable feat for a breed in the animal husbandry arena.

Earlier reports on the Nguni also mentioned that this breed has been found producing off the sand or Ilala veld of Kwazulu-Natal. The native pasture has an exceptionally low

nutritional value and consists of sourveld, with *Aristida* species ("steekgras") abounding. These animals were small framed, in comparison to Ngunis found in the sweeter areas of the province. Once again, the ability of the Nguni not only to survive and maintain itself, but to produce and reproduce on such low nutritional pastures, declares in no uncertain way the breed's strength, hardiness and adaptability under such extremely trying environmental conditions.

### The Nguni and frame size

Earlier reports point to the fact that originally, no large-framed beef animals were observed on the African continent. In fact, the animals were smaller framed, the latter depending on soil and pasture type. The Nguni, being born and bred in Africa for between 50 and 80 centuries, fitted that description. A small-framed animal of the relative early maturing type has a distinctive advantage on the African continent with its low nutritional pasture and frequent droughts. It enables the animal to reach puberty at a relatively early age, thus nutrients are earlier channeled to the important function of reproduction. In the case of larger framed, later maturing animals, more nutrients are required for growth function, and the reproductive process is thus delayed. From the foregoing it is clear that a smaller framed beef animal is more suited (thus better adapted) to the environment of the Southern African subcontinent.

### Man

In the midst of the intrinsic and complex climate-soil-vegetation interaction, man makes far-reaching decisions that often lead to the deterioration of the adaptability of the herd. The following threats are real and the Nguni stockman should be wary of them:

- Man's absolute obsession with accelerated growth of the animal. The Nguni possesses wonderful and unique characteristics which places it in a league of its own. We marvel at the way it produces off pasture of low nutritional value, at the hardiness of the animal in the presence of especially external parasites, at the relatively good feed conversion rates even at pastures of low nutritional value, that the Nguni has "built-in" high nitrogen levels in the blood and urine, that the Nguni cow reproduces and produces even after attaining the age of 20 years, at how easily a Nguni bull of good standing serves 60 females and more during a three month mating period, and ... the list seems never-ending. Not surprisingly, these wonderful attributes came to being because the Nguni has been around for a long time, and is superbly adapted to its surroundings. The natural vegetation of the African continent did not allow the Nguni to grow fast, the selection for growth also not having been practiced by the earlier stock owners.

However, this scene is changing fast. Too many modern-day Nguni producers are challenging the relatively slow growth rate of the breed. Selection for growth was largely untapped and unexploited for many centuries, the threat now being that tremendous initial strides are made when selection for this parameter is made. It appears that few are aware that a negative relationship exists between selection for growth and fertility. One of the most important characteristics of the Nguni, viz. high fertility, is thus under severe threat of being reduced to a mediocre level. When we accept the close relationship of fertility with adaptation, then the adaptability of the breed is, therefore, also in jeopardy.

- In conjunction with the above, the scientific formulation of various modern-day licks with promises of achieving outstanding production performances, lures the Nguni farmer to put these to the test. Consequently, outstanding production figures abound. Reports are received that even producers in the sweet semi-arid grassland of the country are feeding high protein and energy licks to their stock. It has been found that the feeding of high protein licks leads to an increase of herbage intake of up to 40 % or more. Except that this higher intake may cause havoc with sufficient fodder flow even when stocked at the correct stock-

ing rate, is any thought given to the possibility that stimulating the animal to eat indiscriminately, the breed may reduce or even lose its ability to select plants containing essential nutrients?

- The popularity of the Nguni for some years now is threatening its very existence as a hardy and adaptable breed. The excellent demand for breeding material concomitant with high sales prices are inspiring producers to feed even concentrates to the young heifers in the active growing phase of the natural vegetation in order for them to conceive at 14/15 months of age.

- Too much emphasis is placed on selection of replacement animals and breeding stock by means of utilizing only computer data. Selection is usually done when body weights are taken at birth, weaning (7 months), 12, 18 and 24 months of age. In many instances, the most important economic characteristic, viz. reproduction performance, is not given the attention it deserves. A good stockman will observe feminine characteristics in a young heifer (e.g. progressive teat development) and use this in his/her selection program.

Man's folly and misunderstanding of nature's laws are maybe best illustrated in the recent past, when thousands of especially *Bos indicus* cattle succumbed to the cold winter weather of the eastern Free State. Are we unaware that these cattle have 60 % more

sweat glands, and that the latter are also larger than e.g. *Bos taurus* cattle? These glands have the important function to maintain thermal balance by releasing moisture, this hardly being necessary in an area with its long winters, where it is more important to maintain heat production. Furthermore, one has to realize that the deaths of these animals are a scratch on the surface; much more production performance is lost year after year when these unadapted animals, with little or no hair cover and the mentioned increased sweat glands, shiver continuously to maintain homeostasis.

Similarly, Nguni breeders have to take the environment into account, marry the correct type of Nguni to it in order to exploit the animal's potential to the fullest. As the Nguni was shaped by nature for many centuries, it is then little wonder that the Nguni breeder should first and foremost become an ecologist in own right to understand the complex interaction between the animal and its environment, and act accordingly. Inspectors should become acquainted with the environment in which they are to inspect animals, e.g. being more lenient in allowing for the hair coat of animals in sourveld areas with concomitant long winters.

### Conclusions

The Nguni is probably the hardest and fertile beef breed in the world, these and other attributes testifying to its measure of adaptation gained on the African continent over many centuries. For this reason, the Nguni

Cattle Breeders Society adapted the following mission statement, viz. to conserve, maintain and develop the unique reproduction and production traits of the Nguni breed. In order to strive towards this objective and keep this wonderful mother line intact, one should adhere to the caution of the late Dr. Geoff Harwin, viz. striving for absolute high production performance, implying high growth rates.

The rare and unique characteristics of the Nguni that makes it such a much sought-after breed, should rather be further exploited and developed in order to keep these qualities intact, adaptation of the breed being not the least.

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\* *This article is available in Afrikaans from the society.*

