

**PROSPECTS AND POTENTIAL OF SOUTHERN AFRICAN CATTLE BREEDS:  
THE NGUNI EXAMPLE**

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**SUMMARY**

All the indigenous cattle breeds of Africa are fairly small in size. Due to overstocking and poor management, the misconception was established that these breeds are poor performers. The indigenous Nguni seems to be ideally suited as a dam line in terminal crossbreeding as it is highly fertile, no calving difficulties occur and the performance of the crosses is highly desirable. The effect of tick infestation on the productivity of Nguni cows is not significant as a very limited number of ticks feed to maturity on this breed, due to its natural resistance.

**INTRODUCTION**

There is an important difference in beef cattle production between the African continent and other continents such as the Americas and Australasia. Those continents had no indigenous breeds at their disposal and had to rely on exotic material to establish herds of cattle. In contrast, Africa was richly endowed with a large number of indigenous breeds. As a result of natural selection, these indigenous breeds have become adapted to the prevailing conditions and have a most important role to play in animal production. All the cattle breeds of Africa, even when kept under optimal conditions, are fairly small in size, indicating that the environment is such that it cannot support larger animals (Scholtz, 1988). Due to an increase in human population and the social status linked to cattle ownership by tribal people, more animals were kept, resulting in overstocking. In this way the misconception was established that indigenous breeds are poor performers with little improvement potential. The work reported here indicates the contrary.

**MATERIALS AND METHODS**

The indigenous Nguni, *Bos taurus africanus* (Meyer, 1984), from Africa will be used as an example in this paper. The Nguni developed along the east coast of Southern Africa, which is climatically one of the most trying and disease ridden cattle areas. The data for Table 1 were obtained from the official Southern African performance testing scheme and that for Tables 2 and 3 from experimental work on the farm Loskop South (25° 18'S, 29° 20'E) situated in a bushveld region in the eastern part of South Africa. Where applicable, the data were analysed with the LSML76 computer program of Harvey (1988).

**RESULTS AND DISCUSSION**

Comparative Performance

The comparative performance of the different breeds in South Africa is presented in Table 1. From this table it is clear that the Nguni is one of the most productive breeds in South Africa although it is relatively small with a low growth rate (ADG).

Table 1. Performance of beef breeds in South Africa (breed averages obtained from the South African performance testing scheme)

Breed	Cow Mass	Calving %	Cow Prod <sup>1</sup>	Weaning Mass	ADG <sup>3</sup>	Feedlot <sup>2</sup> FCR <sup>4</sup>
Afrikaner	459	72	27	173	1.13	7.8
Brahman	477	79	33	197	1.16	7.2
Nguni	396	87	36	164	1.21	7.1
Bonsmara	466	81	34	197	1.45	7.0
Drakensb.	482	72	30	200	1.39	7.3
Santa G.	483	75	33	209	1.49	7.0
A. Angus	455	84	35	192	1.46	7.3
Hereford	479	84	32	183	1.42	7.0
S. Devon	522	79	31	206	1.57	7.0
Sussex	555	82	30	201	1.42	6.9
Charolais	632	75	27	228	1.76	6.7
Pinzgauer	474	83	32	204	1.57	7.0
Simmental	507	77	34	221	1.66	7.0
n	11,119	21,294	11,119	29,357	630	630

- <sup>1</sup> - kg calf weaned/100 kg of cow mated  
<sup>2</sup> - 140 day intensive feedlot test  
<sup>3</sup> - postweaning average daily gain (kg)  
<sup>4</sup> - feed conversion ratio (kg feed/kg mass gain)  
n - mean number of observations/breed

#### Terminal crossbreeding

No calving difficulties or perinatal deaths occurred in 29 Charolais x Nguni, 17 Simmental x Nguni and 17 Chianina x Nguni crossbred calves. If a 10% chance of dystocia or death exists, the probability of observing one or more cases from a sample of 63 would be  $100(1-0.9^{63}) = 99.9\%$ . If a 5% chance exists the probability would be 96.1%. Therefore, it seems that dystocia will be negligible if the Nguni is used as a dam line. There was no difference in the percentage of calves surviving from birth to weaning between the Nguni and its crosses, or in the reconception rates between Nguni cows that suckled pure Nguni or crossbred calves. Thus, there appears to be no additional drain on cows when producing crossbred offspring. The performance of the different breeds and crosses is given in Table 2. While the average birth mass was 10% below the midparent value, the average weaning mass was 6% above the midparent value. The postweaning growth rate of the crosses was 43% higher than that of Nguni, while the feed conversion ratio (FCR) was 10% better than that of the best purebred. Despite the suppression on birth mass below that of the mid-parent value, the weaning mass and growth rate of the different crosses are close to that of the larger parent. The negative maternal effect on calf birth mass due to the smaller cow, therefore, does not seem to persist up to adult life as in the horse (Hammond et al. 1971).

Table 2. The performance of different breeds and their crosses

Trait	Breed type			% deviation from midparent
	Nguni	Charolais	Cross	
n	301	40	29	
Birth mass	27	47	32	-14%
Weaning mass	183	222	215	+6%
ADG	1.12	1.77	1.65	+12%
FCR	7.5	6.6	6.4	-9%
		Simmental	Cross	
n		*	17	
Birth mass		46	31	-15%
Weaning mass		227	215	+5%
ADG		1.71	1.55	+10%
FCR		7.8	6.6	-14%
		Chianina	Cross	
n		6	17	
Birth mass		34	30	-2%
Weaning mass		199	214	+12%
<b>Overall mean</b>	<b>Nguni</b>	<b>Large European</b>	<b>Cross</b>	
Birth mass	27	42	31	-10%
Weaning mass	183	216	215	+13%
ADG	1.12	1.74	1.60	+12%
FCR	7.5	7.2	6.5	-12%

\* - breed average adjusted to be comparable

#### Tick infestation

The effect of tick infestation of Hereford, Bonsmara and Nguni cows on the weaning masses of their calves in a dipping versus non-dipping situation was investigated (Table 3). All the cows were mated to the same Nguni bull. Tick counts were done on a monthly basis and adjusted to a 205-day lactation period. All the calves and cows in the dipped group were treated every three weeks with a pyrethroid acaricide. Breed had a major effect on the level of tick infestation, with Herefords being most susceptible and Ngunis least. The productivity of Nguni cows as measured by the weaning masses of their calves was also the least affected. It was estimated that each engorged female tick (predominantly *Boophilus decoloratus*) caused a reduction of 8.9g, 8.0g and 8.6g in the weaning masses of calves from the three breeds respectively. The effect of tick infestation on the productivity of Nguni cows was small only because a limited number of ticks fed to maturity on the breed due to its natural resistance. However, each tick that did engorge caused a comparable loss in productivity.

Table 3. Tick infestation and the effect thereof on the cow productivity of three cattle breeds (Scholtz et al., 1991)

	Hereford	Bonsmara	Nguni
Number of calves - dam dipped	5	5	18
Number of calves - dam not dipped	5	6	5
Calf weaning mass - dam dipped (kg)	166.7	184.1	169.1
Calf weaning mass - dam not dipped (kg)	132.2	166.5	164.7
Difference (kg)	29.5	17.6	4.4
Number of one-host ticks <sup>1</sup>	3137	2030	431
Number of multi-host ticks <sup>1</sup>	164	164	82
Effect of engorged female tick <sup>2</sup>	8.9 g	8.0 g	8.6 g

<sup>1</sup> - Estimated total number of engorged female ticks on each breed during lactation of 205 days

<sup>2</sup> - was calculated as follows : difference in weaning mass/(number of one-host and number of multi-host ticks)

### CONCLUSION

The expertise of Australian and South African scientists with the experience and information obtained from projects in various subtropical and tropical areas can be very valuable to the livestock industry in these areas, on condition that the prospects and potential of indigenous breeds are acknowledged and utilized.

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