INDIGENOUS CATTLE BREEDS' PERFORMANCE IN SOUTHERN AFRICA:

A BOPHUTHATSWANA CASE STUDY

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INTRODUCTION

In most of the Southern African countries the standard of husbandry and management and the attitude of many cattle owners are such that productivity is often extremely low, and little or no increase in production is possible through the introduction of potentially more productive breeds until these traditional methods of husbandry have been changed. On the other hand, as a result of natural selection, indigenous cattle (Sanga breeds) which evolved in this part of Africa have become adapted to the prevailing conditions and have a most important role to play in successful animal agriculture in developing areas of South Africa. There is need therefore to conserve our indigenous cattle breeds in their areas of origin in the environment which will enable them to maintain their distinctive characteristics. These indigenous cattle should form the basis of the cattle industry under the current managerial and environmental conditions in most of the Southern Africa region. These breeds are hardy, adapted and remarkably disease resistant and are often utilized for domestic milk production, but due to suboptimal production factors, their productivity appears to be low.

In the recent past, there has been a substantial body of published reports on indigenous breed productivity in Southern Africa. This paper summarizes some of the results of the published reports and gives a preliminary report of a study on the Bonsmara, Nguni and Africander breed performance at Radobil ranch (Ganyesa District) and at Klipkuil ranch (Madikwe District) in Bophuthatswana.

INDIGENOUS BREEDS OF SOUTHERN AFRICA

Nearly all of the Southern Africa indigenous cattle have their humps in the cervico-thoracic (neck) position (i.e. Sanga type breed). These breeds can be classified as follows:

A. Longhorn Sanga:
   (i) Setswana Breeds: Barotse, Tswana, Tuli, Matabele, Ovambo.
   (ii) Nguni Breeds: Nguni, Bapedi, Landim, Nkone.
   (iii) Africander

B. Shorthorn Sanga: Mashona, Tonga, Basuto, Drakensberger.

Indigenous zebu breeds in Southern Africa are the Angoni and Malawi Zebu. The Bonsmara breed was derived from crosses between the Sanga and the *Bos taurus* breeds.

These indigenous breeds have specific characteristics which make them suitable for production in their environment. Such characteristics are: low feed requirements and intake; ability to

recover more quickly after a period of food shortage; a long breeding life up to 10 - 12 calvings; excellent draft qualities; and,in some breeds, good beef carcasses at lower cost than crossbreds.

BREED PERFORMANCE

Breed performance and characteristics for the indigenous cattle breeds and types in Southern Africa are summarized in Table 1.

Table 1: Production characteristics of indigenous breeds of Southern Africa

Breed	Number	ADG	FCE	ADA	400-day wt
Bonsmara	518	1514	7.1	1125	486
Drakensberger	61	1410	7.5	1078	467
Nguni	58	1108	7.3	783	341
Afrikander	41	1157	7.7	901	392
Brahman *	101	1210	7.1	1025	442
Hereford *	56	1706	6.5	1247	535

(Maree, Casey 1993) * Imported Breeds.

Observed fertility and comparative income from Sanga (Nguni), Afrikaner and Hereford cattle on extensive range conditions without supplementation were as indicated in Table 2.

Table 2: Fertility and comparative income from Sanga, Afrikaner and Hereford cattle on extensive range conditions without supplementation

Breed	Av. Calving % (6 years)	Av. Calving Interval (days)	Net Income (Afr. = 100)
Afrikaner	74	460	100
Hereford	78	462	97
Sanga	92	372	141

(Maree, Casey 1993)

The environomental influences probably are the main determinants of calving percentage, given the low heritability (h^2 = 0.11) of cow fertility. Lactational anoestrus has been identified as an important component of differences in low fertility. Afrikaner cows in particular are known to be affected by this phenomenon.

INDIGENOUS BREEDS' PERFORMANCE IN BOPHUTHATSWANA

An analysis of data collected between 1989-92 at Randobil (Ganyesa) and Klipkuil (Madikwe) ranches was done to study the performance of Bonsmara, Afrikaner and Nguni breeds in

Bophuthatswana. At Radobil hay plus licks are given during winter and at Klipkuil no winter supplements are given other than licks.

The means of the traits studied are indicated in Table 3 and the analysis of variance to estimate the breed, sire (within breed), sex, and month of birth effect were done according to Model 1 using the Harvey (1987) program. There was, in the data, breed and ranch confounding and therefore the ranch was not included in the analytical model. Genetic parameters were not estimated due to too few progeny per sire. The results are as indicated in Tables 4 and 5.

Fig: 1 $X_{ijklm} = \mu + A_i + B_{ij} + C_k + D_l + e_{ijkl}$

Where: μ = Population mean

A_i = Discrete Breed effect

B_{ij} = Random sire effect (Nested within Breed).

C_k = Discrete Sex effect.

D_l = Discrete month of birth effect (October, November, December, January).

e_{ijkl} = Random error.

Table 3: Mean Performance

Breed	No.	BWT (kg)	WT200 (kg)	C.I.1 (days)	C.I.2 (days)
Bonsmara	92	31.1	150.8	685	445
Nguni	125	30.3	135.6	474	454
Afrikaner	63	30.2	173.6	441	382

Table 4: Analysis of variance for Birth Weight:

Source	DF	SS	MS	F
Breed	2	26.2	13.1	
Sire (within Breed)	10	905.7	90.6	**
Sex	1	549.8	549.8	**
Month of Birth	4	477.0	119.2	**
Remainder	262	5837.9	22.3	

** $P<0.01$

Table 5: Analysis of variance for 200-day weight:

Source	DF	SS	MS	F
Breed	2	57299.3	28649.6	
Sire (within breed)	10	230176.6	23017.7	**
Sex	1	1522.2	1522.2	
Month of Birth	4	12187.9	3047.0	
Remainder	262	449509.5	1715.7	

** $P < 0.01$

CONCLUDING REMARKS

From the performance of the three breeds, in the Bophuthatswana study, it appears they survived well through the long 1989-92 drought. These breeds play an important role in beef cattle production in the extensive bushveld farming areas of Southern Africa. The highly significant variance between sires within breed suggests that genetic improvement programmes would lead to higher birth weights and 200-day weights. However the problems of dystocia, due to high birth weights, have to be taken into account.

REFERENCES

1. Harvey, W.R. (1987). User's guide for LSMLMW Least Squares and Maximum Likelihood Computer Program. Ohio State University, Ohio, U.S.A.

2. Maree, C. and Casey, N.H.(1993). Livestock Production Systems. Agri Development Foundation, Brooklyn 0011, R.S.A.