

A NOTE ON THE HERITABILITY ESTIMATES OF BIRTH WEIGHT AND CALVING INTERVAL OF WHITE FULANI CATTLE IN IBADAN

S.T. MBAP

Animal Production Programme, School of Agriculture, Abubakar Tafawa Balewa University, P.M.B. 0248, Bauchi, Nigeria.

Received 14 November, 1994; Accepted 25 April, 1996

ABSTRACT

Heritabilities of birth weight and calving interval in White Fulani Cattle were estimated using data from seven sires and 147 dams collected in Ibadan between 1970 and 1982. The heritability estimates were 0.21 ± 0.26 for birth weight and 0.012 ± 0.16 for calving interval.

Key words: Heritability, paternal half sibs, variance components, White Fulani

INTRODUCTION

The White Fulani cattle is the most predominant breed of cattle in Nigeria. Although a lot of work has been carried out on the productivity of White Fulani cattle in Nigeria only fragmentary studies have been devoted to the estimation of genetic parameters on the productive traits of the breed (Olaloku *et al.*, 1971; Dettmers and Williams, 1978). This could be because large data on which accurate estimates of genetic parameters could be made are not available. However, the estimation of genetic parameters on traits of economic importance is necessary for the planning and execution of breeding programmes. It is therefore imperative that where data are available they should be utilized.

This study therefore utilizes calving data on White Fulani cattle in Ibadan University farm to estimate the heritabilities of birth weight and calving interval.

MATERIALS AND METHODS

The introduction, description, breeding history and management of White Fulani cattle in Ibadan have been given (Olaloku *et al.*, 1971). The White Fulani cattle were first introduced into the University of Ibadan farm from the Shika Stock in Zaria. However, other

stock have been added through purchases from other sources within and outside the country. The White Fulani herd however was not pure; it was made up of 89% White Fulani, 10% Kuri and 1% Ndama (Dettmers and Williams, 1978).

The herd was under veterinary care where routine drenching, vaccination, spraying against ectoparasites and treatment against common cattle diseases were practised. The cattle were also grazed on improved pasture and supplemented with cotton seed cake and brewers dry grain in the dry season.

Ibadan is essentially in a hot sub-humid zone with lowland rainforest vegetation. The climate is as described by Mbap and Ngere; (1991).

The data used in this study were calving records from 1970 to 1982. The calving records were from seven sires and 147 cows. Birth weight of calves were taken within 24 h after birth. Age at first calving was calculated as the interval in days between the date of birth of a cow and the date of its first calving. The calving interval was calculated as the interval between two consecutive calvings. Two seasons were recognised - dry (December - February) and wet (March - November). The data was statistically analysed using the least square procedure (Harvey, 1977).

RESULTS AND DISCUSSION

Preliminary analysis indicated that the effects of year, season, sex, type and parity of birth on birth weight and calving interval were not significant. This is contrary to the findings of Olaloku *et al.*, (1971) where most of the environmental effects tested, on birth weight, were significant except the effects of month (season) and year of calving. Data were also available on age at first calving but analysis

TABLE 1 LEAST SQUARES CONSTANTS OF BIRTH WEIGHT AND CALVING INTERVAL BY BREEDING SIRES.

	N	Birth Weight		N	Calving interval	
		LSC	S.E		LSC	S.E
Overall mean	384	22.32	0.66	186	430.86	9.81
Sire	68	36	1.65	21	-0.59	20.54
	138	79	1.14	19	-17.97	21.12
	139	3	-0.52	-	-	-
	159	1	-0.32	-	-	-
	294	63	0.81	34	-8.25	17.91
	473	91	-0.80	39	-1.68	17.36
	761	111	0.04	73	28.48	15.70

could not be carried out on them because the data were scanty.

The average birth weight, age at first calving and calving interval were 22.3kg, 1436.3 and 438.3 days respectively (Table 1). The birth weight values appear low when compared to those reported by Olaloku *et al.* (1971). However, the age at first calving and calving interval values are consistent with the report by Dettmers and Williams (1978). The effect of sire on birth weight was significant but the effect of sire on calving interval was not.

The effect of dam-within-sire on both the birth weight ($P < 0.01$) and calving interval ($P < 0.05$) however were significant.

Estimates of heritability of birth weight and calving interval from the paternal half sibs variance components were 0.21 ± 0.26 and 0.012 ± 0.16 . Although these heritability values have high standard errors, which could probably be due to small population size used, they fall within values reported in Literature (Olaloku *et al.*, 1971, Dettmers and Williams, 1978).

ACKNOWLEDGEMENT

The author wishes to acknowledge the Head of Department of Animal science, University of Ibadan, Nigeria for permission to use the data.

REFERENCES

- DETTMERS, A. and WILLIAMS, T.A. (1978). Some genetic parameters in White Fulani (Bunaji) cows, *Nigerian Journal of Genetics*, 2: 45-52.
- HARVEY, W. (1977). User's guide for LSML 76, Mixed Model Least Squares and Maximum likelihood computer program, Ohio State University, Ohio, 76pp.
- MBAP S.T. and NGERE, L.O. (1991), Breed and environmental factors affecting the performance of some imported and crossbred cattle in Ibadan, *Tropical Agriculture (Trinidad)* 68: 181-185.
- OLALOKU, E.A. HILL, D.H. and OYENUGA, V.A. (1971). Observation on the White Fulani (Bunaji) Zebu cattle of Northern Nigeria in a Southern Nigeria environment. I, Factors influencing the birth weight of calves in Ibadan, *Tropical Agriculture (Trinidad)* 48: 209-215.