CHARACTERISATION OF WHITE FULANI AND SOKOTO GUDALI CATTLE BREEDS IN BAUCHI STATE, NIGERIA

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ABSTRACT

The study was conducted in Bauchi state between January, and July, 1997 to characterize White Fulani and Sokoto Gudali cattle breeds. Thirty animals of both sexes from each breed were randomly selected from fifteen farms/herds. Observations were carried out on both quantitative and qualitative characters. Sokoto Gudali was significantly ($P<0.05$) higher in five quantitative traits, while the White Fulani was significantly ($P<0.05$) higher in one quantitative traits only. Sokoto Gudali was higher in lactation yield (321l) than White Fulani (195l). Tail length was 128.5 cm for Sokoto Gudali males and 114.8 cm for White Fulani males. Sokoto Gudali females had tail length of 127.2cm vs 116.3cm for White Fulani females. Scrotal circumference was 210.8cm in Sokoto Gudali females vs 198.3cm in White Fulani females. Mature weight in Sokoto Gudali females was 758.5kg vs 634.6kg in White Fulani females. The White Fulani breed was significantly ($P<0.05$) higher in number of days dry, 129.9 days vs 104.8 days for Sokoto Gudali breed. The descriptive (quantitative) parameters also showed marked differences between breeds.

Keywords: Cattle Breeds Characterisation, White Fulani, Sokoto Gudali.

INTRODUCTION

Cattle in Nigeria belong to several breeds such as White Fulani, Kuri, Shuwa, Sokoto Gudali, Adamawa Gudali, Red Bororo, Biu, Borgu, Muturu etc. (Williamson and Payne, 1989). Cattle are the most important species of ruminants in Nigeria. Most cattle found in Nigeria are Zebu, which in general are triple purposed. Apart from contributing to the

supply of meat, and milk, they are a ready source of draught. However, some specialization among breeds resulting in either milk or beef types has occurred (Mason, 1951). Joshi and other (1937), classified African cattle on the basis of location and phenotypic characteristics such as absence, presence and location of humps, size of horns and colour marking etc. In Bauchi state the most predominant breeds of cattle are the White Fulani (Bunaji) and Sokoto Gudali (Bokoloji) where they are used for meat, milk and draught while their faeces are used as manure. The White Fulani however, is the most numerous and widely adapted (McLeroy and Carter, 1968), and are mostly owned by nomadic Fulanis. The Sokoto Gudali is believed to be a more recent breed (Gates, 1952).

In spite of the availability and importance of the two cattle breeds very little work has been carried out to characterize them. The characterization of the breeds will enable quick identification, their productive performance, within limits, would also be known. Knowledge of the characteristics of the breeds would also enable the design of suitable management procedures such as, nutrition, disease control, reproduction and housing. It would also assist in the planning and execution of suitable breeding and improvement programmes.

MATERIALS AND METHODS

The study was carried out for over 60 days through herd/farm visits within Bauchi Local Government Area and some nearby villages such as Ruda Yausa in Ganjuwa Local Government Area and Alkalari in Alkalari Local Government Area of Bauchi State.

Locations, topography and climate

Bauchi state is located between latitude $10^{\circ} 10''\text{N}$ and $10^{\circ} 33''\text{S}$ and longitude $9^{\circ} 40''\text{W}$ and $10^{\circ} 13''\text{E}$ and at an altitude of 690.2m above sea level. The estimated land mass is 3354.km². It has an average annual rainfall of 1091.4mm with peak rainfall in August. The average relative humidity at noon was 42%. The hottest months are March and April with mean maximum temperature of 40.6°C. The mean annual maximum and minimum temperatures are 32.4°C and 18.5°C. The mean annual maximum and minimum temperatures are 32.4°C and 18.5°C respectively (meteorological station, Bauchi, 1988). The vegetation is open Savannah woodland. Trees normally occur singly or in clusters while intervening spaces are occupied by a canopy of non-woody herb species including grasses. The grasses may grow to a height of 3.5 metres or more but are of low nutritive value in the dry season.

Type of animals and management

The cattle breed considered in the study were the White Fulani and Sokoto Gudali breeds. Some description of these breeds has been given (Williamson and Payne, 1989 and Maule, 1990). Generally, two systems of management were employed. Cattle on private and institutional farms were semi-intensively managed, while the Fulani herds were under the agro pastoral system. Under the semi-intensive system, cattle were allowed to graze in the day for 6 hours but brought back to the pen and fed concentrate made up of cotton seed cake, groundnut haulms and salt lick. Most concentrate feeding was in the dry season. Some prophylactic and anaphylactic medications were periodically given against common diseases. Under the agropastoral system, animals grazed the free range without supplementation in the wet season. In the dry season they grazed the range in addition to crop farms and were also fed crop residues. Little medication was offered under this management system.

Data collection and analysis

Verbal questionnaires, visual observations and simple measurements were used for data collection. Linear measurements were carried out using a measuring tape while weight measurements were carried out using a weight bridge. Milk yield parameters were obtained from available records or through questionnaires where records were not available. Wither height was determined as the distance from the pin bone of the sacrum to the dew claw of the fore limbs. Tail length was also determined as the distance from the 2 pin bones of the sacrum to the base of the tail twitch. Body circumference was measured perpendicular to the medium immediately posterior to the shoulder blade at the sixth to seventh ribs. Scrotal circumference was determined at the mid length of the scrotum. Means were estimated for each quantitative trait and simple test of significance between categories were carried out using t-test.

RESULTS

The results are presented in Tables 1 and 2. Table 1 shows the means of some quantitative characters of the two cattle breeds. The White Fulani cattle had age at first calving of 1552 days while the Sokoto Gudali breed had age at first calving of 1438 days. The breed difference however was not significant. Cows were milked, on most farms herds, in the morning only. The daily milk yield was 1.08 litres for White Fulani and 1.78 litres for Sokoto Gudali cattle which were not significantly different. However, significant difference ($P<0.05$) existed between the two cattle in lactation yield. The mean lactation yields were 195 and 321 litres for White Fulani and Sokoto Gudali cattle respectively. These values did not include the quantities allowed to calves which were always present at foot during milking. There was a non-significant difference between the lactation length of White Fulani (204 days) and Sokoto Gudali (216 days) but significant difference ($P<0.05$) existed between the number of day dry; White Fulani cattle had a higher value

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TABLE 1: COMPARISON BETWEEN SOME QUANTITATIVE CHARACTERS OF WHITE FULANI AND SOKOTO GUDALI CATTLE

Trait	No.	White Fulani	Sokoto Gudali	Level of Significance = 5%
Age at first calving (days)	30	1552.00	1438.93	NS
Daily milk yield (litres)	30	1.08	1.78	NS
Lactation yield (litres)	30	195.0	321.0	*
Lactation length (days)	30	204.13	216.32	NS
Number of days dry	30	129.86	104.80	*
Calving intervals (days)	30	408.00	398	NS
Length of productive life (yrs)	30	7.46	6.42	NS
Withers height (cm) male	15	132.67	134.40	NS
Withers height (cm) female	15	130.85	130.56	NS
Tail length (cm) male	15	114.81	128.52	*
Tail length (cm) female	15	116.26	127.21	*
Scrotal circumference (cm)	15	33.55	35.89	*
Body circumference (cm) male	15	196.89	203.06	NS
Body circumference (cm) female	15	198.27	210.84	*
Mature weight (kg) male	15	288.10	344.3	*
Mature weight (kg) female	15	280.4	330.0	NS

(129.9 days) than Sokoto Gudali (104.8 days). Non-significant difference was observed between the calving interval of White Fulani (408 days) and Sokoto Gudali (398 days). Similarly the length of productive life or longevity was not significantly different between the two breeds.

There was no significant difference between mature weight of males of the White Fulani (617.7kg) and Sokoto Gudali (726.8kg). However, significant differences ($P<0.05$) existed between the weight of mature White Fulani cows (634.6kg) and Sokoto Gudali cows (758.5kg). There were significant differences in tail length between the two cattle breeds; 114.8cm for White Fulani males, 128.5cm for Sokoto Gudali males, 116.3cm for White Fulani females and 127.2cm for Sokoto Gudali females. Height at wither were 132.7cm for White Fulani males and 134.4cm for Sokoto Gudali males, while height at wither was 130.8 and 130.6cm for White Fulani and Sokoto Gudali females respectively. Both breed and sex difference in wither height were not significant.

There was a significant difference ($P<0.05$) in the scrotal circumference of the two breeds; on the other hand there was no significant difference in the body circumference of males of the two breeds. Table 1 shows that significant differences ($P<0.05$) existed between the females of the two breeds; White Fulani females had mean body circumference of 198.3cm while Sokoto Gudali had 210.8cm. Twinning was very rare in both breeds. Only one farmer had ever observed a case of twinning in his herd.

Table 2 shows some qualitative traits of both White Fulani and Sokoto Gudali breeds. Dewlap is not prominent in both male and female of White Fulani but large and very pronounced in both sexes of the Sokoto Gudali. The coat colour is generally white in the White Fulani with black spots around the neck and the face. The Sokoto Gudali on the other hand is generally cream coloured but gray and dark shadings are found around the face, neck and hindquarters.

TABLE 2: COMPARISON BETWEEN SOME QUALITATIVE CHARACTERS OF WHITE FULANI AND SOKOTO GUDALI CATTLE

Trait	White Fulani	Sokoto Gudali
Type of dewlap	Not prominent in both sexes	Large and very prominent in both sexes
Coat colour	Generally white, although black spots are seen mostly around the neck to the face	Cream colour but grey with dark shadings are seen around the face, neck and hind quarters.
Skin colour	Black	Pigmented
Horn type:		
Male:	Medium size	Mostly very short
Female:	Long lyre-shaped and turned upwards	A little longer than in the male
Ear type	Small and erect in both sexes	Large and very pendulous in both sexes
Naval flap/penis sheath	Narrow and inconspicuous in both sexes	Large and very conspicuous in both sexes
Hump type	Well developed in the male than in the female	Well developed in both sexes
Temperament	Not docile	Mostly very docile

The skin colour in White Fulani is white while that of the Sokoto Gudali is pigmented. The male of White Fulani generally possesses medium sized horns while the horns are long, lyre shaped and turn upwards in the females. The horns are short in both sexes of Sokoto Gudali although generally a little longer in females than males. The ears are small and erect in both sexes of the White Fulani, but are large and pendulous in both sexes in Sokoto Gudali. Navel flap/penis sheath are narrow and inconspicuous in both sexes of White Fulani while in both sexes of Sokoto Gudali they are large and conspicuous. The hump is well developed in the male than female of White Fulani, but it is well developed in both sexes of Sokoto Gudali. The White Fulani cattle are generally wild and temperamental while the Sokoto Gudali are generally docile.

DISCUSSION

Age at first calving of White Fulani in this report does not agree with earlier reports by Dettmers and Williams (1979) and Mbap and Ngere (1995) perhaps due to the fact that age at first calving is dependent on the

environment (Hill, 1988). Age at first calving in Sokoto Gudali as observed in this study disagrees with most earlier reports except Williamson and Payne (1989). Daily milk yield for the two breeds were low which is in conformity with Maule (1990) who stated that tropical Zebu have low milk yield due to their inability to let down milk unless a calf was allowed to suck first. In addition, they have low genetic potential for milk production (Williamson and Payne 1989). The length of lactation of White Fulani disagrees with Williamson and Payne (1989) but the value for Sokoto Gudali falls within the range given by the two researchers. The number of days dry for both breeds also falls within the range given by Alexander *et al.* (1974). The calving intervals for the two breeds however disagrees with earlier reports (Pullan, 1979; Wheat *et al.*, 1972; Oyedipe *et al.*, 1982 and Rege *et al.*, 1994) but are in agreement with Maule (1990). Peters (1984) reported that the main determinant of calving intervals is the period from calving to successful conception. The length of productive life in this study falls within the range of 4 to 10 years reported by

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Voh Jr. and Otchere (1989). However, this result disagrees with Maule (1990) who stated that it is not unusual to find cows 15 to 20 years old, which have had up to 10 calves.

Wither heights in the two breeds do not agree with reports by Maule (1990) who reported higher values and Williamson and Payne (1989) who reported lower values. Scrotal circumferences of the two breeds also disagree with the report of Osinowo *et al.* (1977). Similarly the body circumferences and mature weight in the two breeds do not conform with Umoh and Buvanendran (1982) and Williamson and Payne (1989) respectively. This could perhaps be due to the season in which the observations were made as earlier reports (Maule, 1990) showed that weight gains were higher in some seasons than others. The dewlap feature of White Fulani as observed in this study does not agree with the description given by Williamson and Payne (1989) who stated that they were large and well developed. However, the description of dewlap for Sokoto Gudali agrees with Hill (1988), Williamson and Payne (1989) and Maule (1990).

Dettmers and Williamson (1979) and Zakari (1981) described coat colour in a way similar to the description in this study. However, the description of coat colour of White Fulani in this study does not tally with the description given by Hill (1988). The observation on horn types, shapes, ear type and navel/penis sheath agree with earlier descriptions by Williamson and Payne (1989). Similarly, the description of hump types and temperament of the two breeds in this study tally with Zakari (1981).

CONCLUSION

White Fulani (Bunaji) and Sokoto Gudali (Bokoloji) breeds of cattle are the two most numerous breeds found in Bauchi state, but have not been fully characterized. The result of this study has indicated that the two breeds possess unique quantitative and qualitative traits that distinguish them. This

characterization could enable entrepreneurs who wish to invest in the two breeds of cattle to decide on which to choose. In addition, researchers who are interested in breed identification and characterization would have some bench mark information on which further research pursuits could be built.

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