ABG -24

Evaluation of Some Phenotypical Characteristics of Indigenous Horses in Nigeria at Dass, Azare and Bauchi Local Government Areas of Bauchi State

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Abstract
The study was conducted to evaluate the management, types of coat colors and body measurements of horses in Dass, Azare and Bauchi Local Government Areas (LGAs) of Bauchi State between February and April 2013. A total of 100 questionnaires were randomly distributed to horse owners in the study areas. This was done to determine the type of horse, age, management, ownership, the purpose for keeping. Bodymeasurements including height at withers (HW), body length (BL), chest circumference (CC) and Body weight (BW) were assessed. The data were analyzed using descriptive statistics. The result showed that majority of the respondents were adult males and kept horses for the ceremonial purpose (57%). Out of the 248 horses evaluated only 11 (4.4%) were mares. Among the seven different colour phenotypes identified, Piebald (*Bikili*) and Black (*Akawali*) were the most frequent with 22.58 and 20. 56%, respectively. Although no significant difference ($p>0.05$)was observed, Black horses were found to be the tallest and heaviest with 142 ± 1.16cm, HW and 411.4 ± 26.57 kg BW respectively. This height was below the required standard height of horses, meaning that in FEI competitions horses in the study areas would be considered as ponies. However, more studies to characterize indigenous breeds of horses in Nigeria is necessary.

Keywords: Horse, coat colour, height, body weight, Bauchi

Introduction

Nigeria is endowed with favorable weather conditions for the production of livestock. Northeastern Nigeria presents an elaborate mosaic of livestock species, breeds and production systems (Blench, 1995). Commercial horse production is practically non-existent in the country, but smallholder producers are sparsely found in different parts of the country. The small-scale production is more commonly in the northern parts, where horses are commonly used in traditional ceremonies (Sanusi *et al.,* 2008). There is an extensive specialized vocabulary used to describe equine-related concepts covering everything from anatomy to life stages size, colors, markings, breeds, locomotion, and behavior. A system of classification of horse coat colors and markings is important in the identification of horses as individual animals. Body conformation together with body measurements can be an objective source of characterizing animals. Many scientists believed that relationship exists between conformations, performance and feasibility in all species of farm animals especially in the case of horses (Mihók, 2004).

Different breeds of horses have different conformation and characters such as colour. These features together with most important data of a breed are listed in breed standard (Bene *et al.,* 2014). There are more than 300 breeds of horse in the world today, developed for many different uses. Horses and humans interact in a variety of sport competitions and non-competitive recreational pursuits, as well as in working activities such as police work, agriculture, entertainment, and therapy. Several very similar breeds or strains exist across west and central Africa. They include the Fulani, the Bahr-el-Ghazal of Chad, the Hausa and Bornu of Nigeria, and the Bandiagara, Djerma, Mossi, Songhai and Yagha of the great 'band region' of the Niger River (Hendricks 2007). The greater number of horses in Nigeria is found mostly in northern part of the country where they form an integral part of the culture of the Hausa-Fulani people where they are used for Sallah and other ceremonial purposes. Indigenous Nigerian horses have been used for polo games, pleasure riding, racing, entertainment, ceremonies and research.

The Nigerian horse which is considered to originate from the Barb horses with variable characteristics is also poorly known, which indicates lack of interest or resources for assessing the status of breeds. It is described to have powerful shoulders and lightly built hindquarters. A gently bulging forehead and slightly concave dorsal face profile like that seen in North African Barbs.14 – 14.2 hands are about typical.

The study aimed at evaluating baseline information on horse ownership, management coat colour, and some morphometric indices.

Materials and Methods

A cross-sectional baseline survey study was conducted in Bauchi, Azare and Dass Local Government Areas (LGAs) of Bauchi State of Nigeria between April and June 2013. Bauchi is located in the North-East with a dominant Sudan savanna type of vegetation. The hottest and the coldest months are Apriland December with a mean temperature of ~ 32.39 and of 18.33°C respectively. In the absence of a formal equine census, as many horse owners as possible were randomly selected from each location.

Each owner was visited and interviewed in local language using a purpose-designed questionnaire. Questions included; ownership, management system, type of feeding, age (estimated by dental examination). With the owners' permission, each horse was physically examined and body measurements were done with the help of measuring tapes. Morphometric measurements (in cm) taken include body length (BL), Chest Circumference (CC) and height at withers (HW).The body weights of the horses were estimated using the formulae:

BW (Kg) = (Heartgirth^2 × body length)/ (8717).

All data were subjected to descriptive statisticsusing Microsoft Excel (Microsoft Office 2013). Differences in means were analyzed using ANOVA the level of significance was set at $p<0.05$.

Results and Discussion

Majority of the respondents were adults in Dass and Azare LGAs with 14.3 % and 63.3 % respectively. Horses were only owned by males as only one female owner was recorded and majority married. Most of the horses were kept for ceremonial purposes as shown in Table 1. Housing and feeding were well managed with many owners choose to keep their horses under semi- intensive system. The greatest percentage (95.56) of the horses was stallions (Table 2).

Table 1: Reasons for keeping horses in Dass, Azare and BauchiLGAs

Reasons for Keeping horse	LGA			
	Dass	Azare	Bauchi	Total
Leisure	0	4	0	4
Sport	0	8	4	12
Ceremony	8	15	34	57
Leisure/sport/ceremony	2	1	13	16
Leisure/ceremony	0	2	9	11
Total	10	30	60	100
Management				
Intensive	9	23	13	47
Semi-intensive	1	7	43	51
Free range	0	0	2	2
Total	10	30	60	100

Table 2: Distribution of Horses According to sexes in Dass, Azare and BauchiLGAs

Sexes	Dass	Azare	Bauchi	Total (%)
Stallions	18	101	118	237 (95.56)
Mares	0	0	11	11 (4.44)
Total	18	101	128	248(100)

Coat colour: Seven different coat colours phenotypes were identified. Piebald was more common (22.58%) followed by Black (20.56%) compared to the rare colours of Bay and Chestnut seen in 6.85 and 4.03% horses respectively (Figure I).

Body measurements: There was no significant difference ($p> 0.05$) in body measurements of horses. Black *(Akawali)* was having the highest body length of 136 ± 1.29cm average height at withers 142 ± 1.16 cm, average chest circumference 155 ± 2.41cm and with the highest average weight of 411.4 ± 26.57 kg (Table 3).

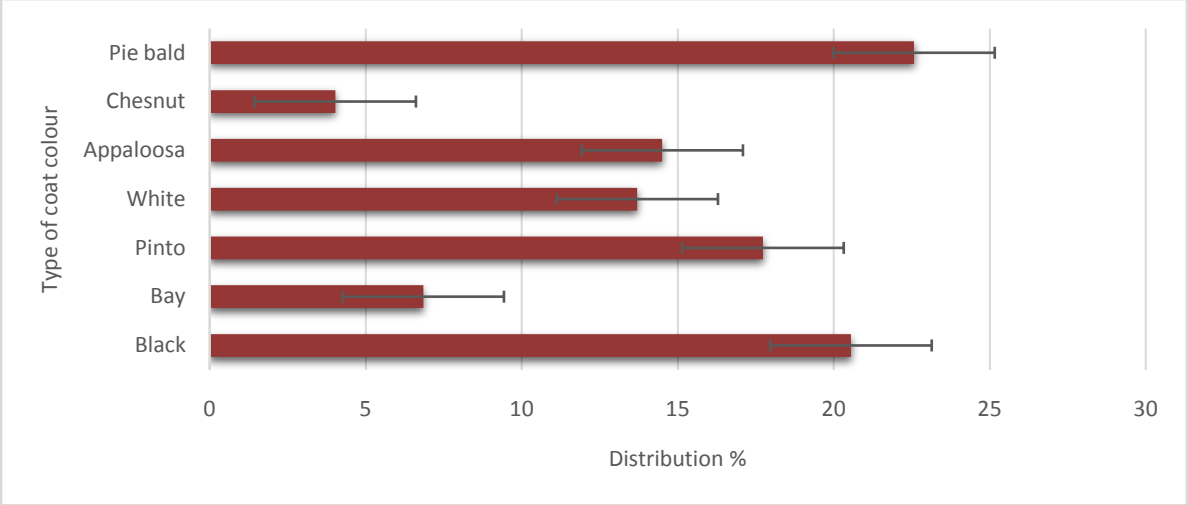

Fig. I: Coat colour distribution of horses in Dass, Azare and Bauchi LGAs

Table 3: Mean body measurements of different types of horses in Bauchi State, (Mean ±SE)

Types (*Hausa*)	N	B L (cm)	HW (cm)	CC (cm)	BW (Kg
Black (*Akawali*)	20	136.4±1.29	142.6±1.16	155.9±2.41	411.4±26.57
Bay (*Arashi*)	11	132.9±2.95	138.3±1.05	141.0±4.15	308.7±24.20
Pinto (*Danda*)	9	129.7±1.53	138.0±1.64	142.7±2.79	304.5±14.17
Appaloosa (*Hurde*)	18	135.3±1.75	141.0±1.32	150.8±3.90	360.1±21.87
Chesnut (*Sari*)	14	131.4±1.26	141.3±1.31	149.6±3.17	339.9±15.69
Pie bald (*Bikili*)	16	131.1±1.89	140.9±1.09	145.7±2.97	321.9±14.57
White (*Mago*)	12	126.6±1.88	138.3±2.39	149.3 ±3.77	327.4±19.67

N – Number of horses, BL – Body Length, HW –Height at withers, CC – Chest Circumference and BW – Body Weight.

From the results of this investigation, it was observed that horse keeping was mainly a male enterprise as there were only few females that were into horse keeping. Majority of the horses were kept mainly for ceremonial purposes which accounted for 88.8% in Dass, 48.5% in Azare and 56.6% in Bauchi metropolis. The horses were managed under intensive system of management in Dass and Azare metropolis, while in Bauchi metropolis, the horses were managed under semi-intensive system of management. This is in agreement with the studies made by Kays (1969) who stated that the horse can be maintained on semi-intensive system of management. Although a lot of mares were used in various equestrian sports majority of the horses in the study areas were found to be males (stallions). This is similar to the report by Sanusi *et al.* (2008), was it considered stallionstobemore prepared for ceremonies.

In horses, body size is an important criterion for the evaluation of different breeds. According to the Fe´de´ration Equestre Internationale (FEI) veterinary regulations ponies taking part in any FEI competition have to be measured at the highest point of the withers. The limit height in accordance with the definition of a pony is 148 cm (58.27 inches) without shoes or with competition shoes 149 cm (58.66 inches). If this height is exceeded the animal is then classified as a horse (van de Pol, and van Oldruitenborgh-Oosterbaan, 2007). In this study, the black horse (*Akawali)* was found with the highest HW of 142.6 cm which below the required standard height of horses. Consequently, in FEI competitions it means all of the horses in the study areas would be considered as ponies.

Conclusions

The results showed that management of horses in the study areas was fair. The result also indicates that horse rearing is a male venture which also showed the level of commitment of the people in promoting their cultural norms and values. Horses in the study are could only compete as ponies in FEI organized sports. More studies to characterize indigenous breeds of horses in Nigeria is necessary.

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