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STUDIES ON ANIMAL TRACTION IN NORTH-WESTERN NIGERIA. I. CHARACTERISATION AND MANAGEMENT OF ANIMALS USED FOR DRAUGHT

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Target audience: Animal scientists, policy makers, farmers.

ABSTRACT

A study was conducted to characterise the animals used for draught in north-western Nigeria. Data were collected by use of structured questionnaires administered by personal interviews on 100 farmers in eight local government areas of Sokoto State. Information collected included species/breeds of animals used for draught, management systems employed, type of work done as well as duration of time animals are kept for work. The results showed that 55 % of the farmers use bulls for traction and 43 % use camels. Among the bulls, the Rahaji are the predominantly used (57 %), followed by Gudali (28 %) and Bunaji (15 %). Among the camels, the Red strain (Ja) is the most abundantly used (50 %), followed by the White strain (Fari)(38 %) and the Black strain (Baki)(12 %). Over 80 % of the farmers manage their draught animals by the semi-intensive system of production. Mostly, bulls are not kept for work for more than seven years. Majority of farmers however keep camels for more than seven years. Most of the sampled farmers prefer animals to motorised form of farm power, mainly because of the lower cost of the former.

Key words: Draught animals; breeds; management

DESCRIPTION OF PROBLEM

As recently as 1981, draught animal research was considered a neglected branch of science despite the fact that draught animals provide 85 % of the power used on farms in developing countries (1). The reason for this neglect could be partly attributed to the fact that in many countries of the developing world, more emphasis was being placed on complete mechanisation of the agricultural system. However, except in few cases, such attempts to mechanise African agriculture have completely or partially failed. The failure has been attributed to lack of necessary capital and infrastructure, as well as to the incompetence on the part of the users of the machinery (i.e. the farmers)(2). In addition, the fact that African agriculture is dominated by small scale mixed farmers makes the use of motorised form of power uneconomic (3). These factors have therefore

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led to the generation of renewed interest in draught animals as a source of farm power.

The factors that affect draught efficiency include breed of the animal, sex, age, liveweight as well as the management practices employed (2, 4, 5). Thus in order to make any meaningful improvements on the use of this important source of farm power, it is necessary to have an insight on the species/breeds used in a particular area, their characteristics as well as the management systems employed. This work aims at providing this information as regards north-western Nigeria.

MATERIALS AND METHODS

The study was conducted in eight local government areas (LGAs) of Sokoto State. These are Isa, Sabon Birni, Tangaza, Gudu, Tabawal, Shagari, Tureta and Dange-Shuni. Sokoto State lies in the north-western part of Nigeria and falls within the sudan-sahel vegetation zone. The climate is characterised by alternating wet and dry seasons, with a short, cool dry period, the harmattan, which lasts between late October and late February. The duration and intensity of the annual rainfall (which lasts only between June and September) increases from north to south, ranging from 60 - 160 days and 635 - 750 mm respectively.

Data were collected by means of structured questionnaires administered by personal interviews on 100 farmers who use draught animals in the LGAs. Information collected include the species/breeds or strains of the animals used for draught, management practices employed, type of work done by the animals and the duration of use. Information was also collected on personal data of the farmers as well as the production system they use. Data collected were analysed by use of means, percentages and range (6).

RESULTS AND DISCUSSION

Characteristics of farmers and production systems employed: : 51 % of the responding farmers are within the age range of 31 - 40 years (Figure 1), followed by those in the age range of 41 - 50 years (22 %). Majority (61.5 %) of the farmers sampled are mixed farmers i.e. they are involved with both crop production and livestock rearing, while 38.5 % are involved with crop production only (Table 1). Land acquisition is 100 % by inheritance (Table 1), which points to the fact that agriculture is still a cultural practice rather than a business-oriented activity in the area.

Livestock rearing is mainly by semi-intensive system of production in which animals are maintained on natural pasture with some supplementation. This is the method employed by 83 % of the responding farmers (Figure 2). Draught animals are normally grazed for about 2 - 6 h, depending on the nature of work and season. Grazing periods are usually longer during the dry season. Feed supplements offered include cowpea hay, grasses, grains, cottonseed cake and other agricultural by-products

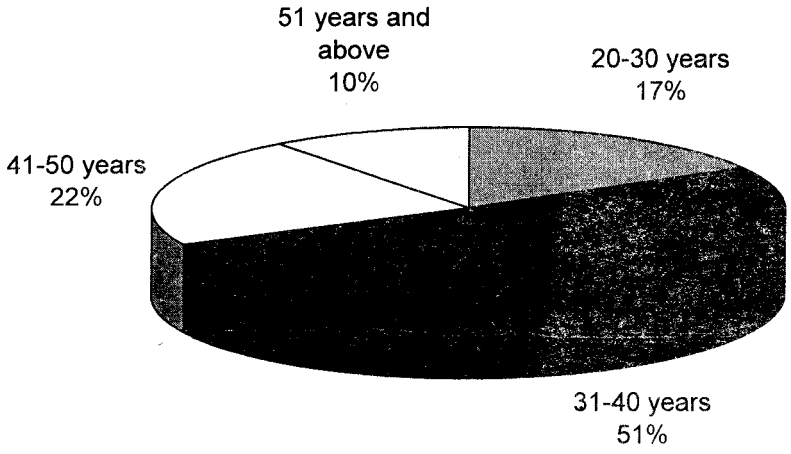

Figure 1. Age range of responding farmers.

Table 1. Farming and land tenure system in North - Western Nigeria (n = 91)

Parameters	Number	%
Farming system:		
Mixed	56	61.5
Arable	35	38.5
Land Tenure:		
Inheritance	91	100
Others	-	-

(Table 2). During working periods, the supplements are offered before and after the working exercise. Camels are only supplemented with roughages and only the bulls receive the other supplements (Table 2). 88 % of the farmers offer mineral supplement in the form of potash (kanwa) which is normally dissolved in drinking water. Another characteristic feed supplement identified is 'hawyi' which is a mixture of cereal bran, cowpea husks, grains, corn stalk, ground cowpea hay and groundnut haulms. Small quantity of water is normally sprinkled on the 'hawyi' prior to feeding in order to reduce dustiness. This supplement is utilised for bulls only by all sampled farmers during all seasons of the year.

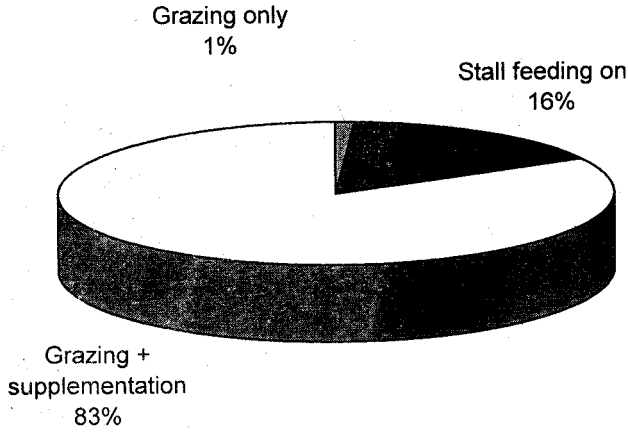

Figure 2. Management system of livestock farmers in north-western Nigeria.

Table 2: Supplementary feeds used for draught animals in North - Western Nigeria.

Types of feed supplement	Percentage of sampled farmers that use the feed supplement for cattle and camels	
	Cattle	Camels
Roughages		
Cowpea hay	100	100
Grasses	-	100
Corn stalk	100	-
Cowpea husk	100	-
Guinea corn husk	34.6	-
Concentrates & by-products		
Grains	100	-
Cotton seed cake	7.3	-
Guinea corn bran	100	-
Wheat offal	16.4	-

44 % of the respondents have 1 - 5 years of animal traction experience (Figure 3), followed by those with 6 - 10 years experience (38 %). Those with more than 10 years experience constitute only 18 % of the sampled population. This might be a pointer to the fact that farming activity in the study area could be related to the family system in which the young ones are those that are actively involved.

Types of animals used for draught: A total of 55 % of the sampled farmers use bulls while 43 % use camels and only 2 % use both (Table 3). This is in line with an earlier FAO statistics which indicated that cattle constitute the most numerous draught animals in the world (7). Among those that use

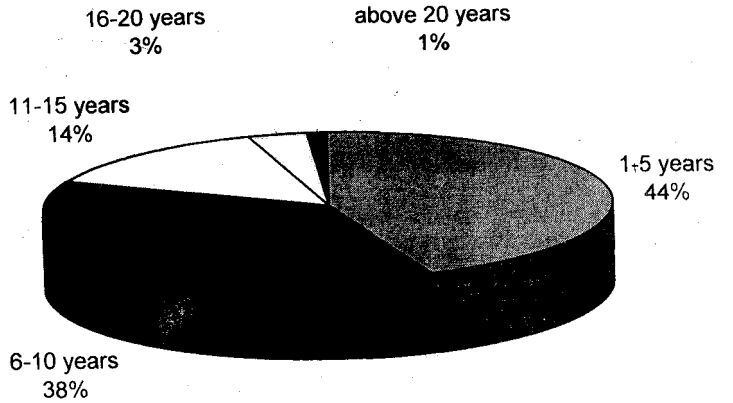

Figure 3. Animal traction experience of sampled farmers in north-western Nigera.

Table 3: Types of animals used for draught in North -Western Nigeria (n = 98)

Species	Number	%
Cattle		
Bulls	54	55.1
Others (oxen, cows)	-	-
Camels	42	42.9
Cattle and camels	2	2.0
Total	*98*	*100*
Breeds of cattle		
Rahaji	31	57.4
Gudali	15	27.8
Bunaji	8	14.8
Total	54	100
Strains of camels		
Red (Ja)	21	50.0
White (Fari)	16	38.1
Black (Baki)	5	11.9
Total	42	100.0

cattle, 57 % use Rahaji, 28 % use Gudali and only 15 % use Bunaji. The farmers responded that their preference for Rahaji was mainly due to its availability and cheaper market price at purchase. Earlier reports have indicated that the Bunaji are preferred for traction in the north-central parts of Nigeria (8). These results therefore indicate that the types of breeds used for draught in northern Nigeria vary with the ecological zone.

The farmers' reasons for preference for bulls to either castrates (oxen) or cows is because according to them, the former are stronger and easier to dispose of at the end of working life. Earlier work in the guinea savannah

zone has shown that 84 % of farmers use bulls (9). However, it was reported that in Niger State of Nigeria, 86 % of animals used for traction are oxen (10). All respondents reported that they do not use their bulls for breeding during the working period because, according to them, it reduces the strength of the animals.

Camels are increasingly being used for draught purposes in the study area as shown in the present study. Earlier reports have indicated that camels are rapidly replacing cattle for draught purposes in the study area (11). The Red strain (Ja) of camels is the most abundantly used (50 %), followed by the White strain (Fari) (38 %) and the Black strain (Baki) (12 %) is the least abundant (Table 3). The abundance of the Red strain in the study area has already been reported (12). The farmers' reasons for increasing interest in camels include (1) unlike bulls, camels can be used for weeding in addition to land preparation. (2) Camels are easier to manage in terms of feeding. This is confirmed by the fact that while camels are supplemented only with roughages, the bulls receive additional concentrates and by-products which add to the cost of production (Table 2). The efficient water utilization of the camel is also another advantage that favours its use in the study area. (3) The working life of camels is longer than that for bulls. Thus while only 25 % of the farmers keep their bulls for more than seven years, 63 % of those that own camels keep them for more than seven years (Table 4). Similar results have been reported concerning the length of time bulls are kept for draught (8, 9). The reason for the higher take off rate of bulls is due to the higher demand for their meat, thus enabling the farmers to easily sell them off. The farmers are also of the opinion that the market value of work bulls appreciates during the period of working life due mainly to faster rate of muscle development, thus attracting higher market price.

Table 4: Duration of time animals are used for traction.

Species	Time kept for traction (years)	Number	%
Bulls (n=56)	2-4	22	39.3
	5-7	20	35.7
	Above 7	14	25.0
Camels (n = 43)	2-4	6	13.9
	5-7	10	23.3
	Above 7	8	62.8

Selection and training of work animals : All the farmers reported that they purchase their animals from local markets, train them (usually for about 1 - 2 years) and sell them at the end of working life. There are some variations on the factors that govern the choice of farmers when buying their animals but they all agree that a good work bull should be strong, active and respond quickly to stimulus. The head should be erect and the

neck should be fairly broad on the upper surface with well developed muscles. The chest should be broad and the legs should be strong, upright and healthy. The hooves should not be overgrown and the animal should not drag its feet while walking. The animal should have a good eye sight, the eyes should be clean and bright and the muzzle should be always moist. There should be no discharge from the eyes, ears, nostrils and the mouth. As for draught camels, factors considered at purchase include good eye sight, heavy liveweight and straight legs. They should also be hardy.

Bulls are purchased at the age of 3 - 5 years and trained for about 3 - 5 weeks during the dry season. Training is initially carried out by attaching heavy wood or cart to the yoke. This is followed by using farm implement (e.g. plough) during the final stages of the training. During the training exercise the bulls are also trained to be familiar with certain farm operation commands. The selection and training methods reported here are similar to what obtains in Sierra Leone (13).

Camels are normally purchased at the age of 4 - 6 years and no special training is carried out. This is probably because since the camels work singly, they quickly adapt to farm operations. In general, quality of work done by the animals appreciates over the period of working life.

All farmers prefer using medium sized yoke for traction. This is because a heavy yoke increase stress on the animal whereas a yoke that is too light breaks easily. Finally, all sampled farmers prefer animals to tractors for farming activities. Their major reasons include (1) the lower cost of animal power compared to tractors. This confirms the earlier observation of Smith (1) who reported that the use of tractors is not economic for most farmers in the developing world because of the subsistence nature of production. (2) Tractors lead to soil compaction, which could delay seed germination. (3) Because of the size of the implements used by tractors large space is usually created between two adjacent farms which often leads to conflict between the farmers.

CONCLUSIONS AND APPLICATIONS

It could be concluded that cattle and camels are the two most important species of animals used for farm power in Sokoto State. The Rahaji is the breed of cattle that is most often used. Bulls are always preferred by farmers. Castrated bulls or cows are not used for traction. As for camels, the Red strain (Ja) is the most often preferred. Farmers prefer using animals rather than tractors as a source of farm power. This is particularly due to the higher cost of the latter. Government should therefore encourage the use of this simple technology instead of complete mechanization. Future research work should be geared towards evaluating the work efficiency of the identified breeds/strains in order to guide farmers in their choice of farm animals.

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