THE HERD STRUCTURE OF BREEDING DOES OF SMALL HOLDER RED SOKOTO GOAT

G.N. AKPA, S. DURU and G.S. BAWA

*Department of Animal Science,
Ahmadu Bello University, Zaria.*

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ABSTRACT

A study to ascertain the herd structure of breeding does of small holder goat production system was conducted in Kano using 15 goat herds selected at random in 3 villages. A total of 250 breeding does were involved. The results indicate that parity of does in the observed herds ranged from one to ten. Twelve percent of the does within the age range, 5-25 months were yet to kid for the first time. In the herds, does that did not kid at least once, up to the age of 25 months were culled. However, majorities of the does were in their 2nd and 3rd parities and within the age range of 12-25 months. Twinning was common at 1st parity, irrespective of the age of does. Parity and litter size of does were the major determining factors on the observed herd structure for the breeding does. The observed structure indicates that <12 months does constitute 20% of the herd; 12-25 months 48%; 26-39 months 11.2% and; >40 months 20.8%. Breeding does leave the herds starting from the 25th month of age at parity 2, 4, 7 and 10, respectively.

Keywords: Herd structure, breeding does, Red Sokoto Goats.

INTRODUCTION

In tropical Africa, there are no formal recording schemes on goats. Furthermore, goats are kept in small numbers and are scattered far and wide in the area. In Nigeria, over 95% of the goats are raised under traditional systems of production. Each animal in a herd is kept for economic and social reasons. Sheep and goat flock structures reported by Bayer (1989) and Otchere *et al.*

(1987) in Nigeria showed that females constituted over 70% of the flocks and a high proportion of males left the flock before they developed their first pair of permanent incisors.

So far, breeding improvement targeted at the small holders' herds have failed to give desired results due to the movement of breeding does in the herds before the projects were concluded. Therefore, under the present circumstances, any breeding strategy to be employed in order to bring about an improvement in the traditionally owned small holder herds, must understand their breeding structure. The present study was carried out to show the age distribution of breeding does, their culling points and the determining factor(s) in the Red Sokoto goat herds.

MATERIALS AND METHODS

The study was conducted in Kano area of Northern Nigeria using 3 locations as follows: Dawakin Kudu, Wudil and Runa. Five farmers herd were chosen at random from each location, giving a total of 15 goat herds. A total of 250 breeding does were observed in all.

Observations were made in terms of age, parity and litter size of does. The ages of the animals were recorded as provided by the farmers, and where the accuracy was doubtful, these were estimated using the animals' dentition (Sastry and Thomas, 1998). The present or last parity and litter size of does at the time of visit to the herds were also recorded. Does that have not kidded at all (primiparous does) in the herds at the time of visit were identified and their ages recorded.

TABLE 1: THE DISTRIBUTION OF DOES BY PARITY AND AGE

Age (Months)	Parity										Total
	0	1	2	3	4	5	6	7	8	9	10
<12	25	25	0	0	0	0	0	0	0	0	0
12-18	4	12	44	0	0	0	0	0	0	0	0
19-25	1	2	7	50	0	0	0	0	0	0	0
26-32	0	0	0	0	7	0	0	0	0	0	0
33-39	0	0	0	0	9	10	2	0	0	0	0
>40	0	0	0	0	2	6	8	26	6	3	1
Total	30	39	51	50	18	16	10	26	6	3	1

The data collected were thereafter, classified on the basis of:

Age (<12 months, 12-18 months, 19-25 months, 26-32 months, 33-39 months, and $\geq$ 40 months of age); Parity (1, 2, 3, 4, 5, 6, 7, 8, 9, 10); and Litter size (1, 2, 3, 4). Data collected were analyzed using summary/descriptive statistics.

RESULTS

The distribution of does by parity and age in the herds studies is given in Table 1. Majority of the does were aged between 12 and 25 months (48%). But does with age range of <12 months (20%) and >40 months (20.8%) were common. In the herds, does within the age group of 26-32 months were few (8.4%). Maximum parity observed in the herds was the 10th and twelve percent of the does within the age range of <12 to 25 months were primiparous, majority of which were less than 12 months of age. Nevertheless, does do not stay beyond 25 months in the herds without kidding. Within the age range of <12 and 25 months, 15.6% of them were in their first parity, with most of them kidding before the age of 12 months (10-11 months). This seems to indicate the possibility of Red Sokoto goats becoming pregnant at the age of 5 and 6 months. Majority of the does were in their 2nd (20.4%) and 3rd (20.0%) parities with their ages ranging between 12 and 25 months; but does at their 3rd parity were exclusively in the age group of 19-25 months. After the 3rd parity, the number of does attaining the 4th

(7.2%), 5th (6.4%) and 6th (4.0%) parities dwindled steadily.

Fig. 1 & Fig. 2

FIG. 1: DISTRIBUTION OF BREEDING DOES ACCORDING TO LITTER SIZE AND PARITY

FIG. 2: DISTRIBUTION OF BREEDING DOES ACCORDING TO LITTER SIZE AND AGE

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However, at parity 7, does that had past the age of 40 months (i.e. 60 months) were (10.4%). At parity 8, 9 and 10, number of does declined steadily in the herds once more. Maximum age for does in the herds was 96 months, (i.e. 8 years). Very few does (0.9%) in the herds attained the 6th parity before the age of 40 months, while 3.2% of them attained the 4th parity before 33 months of age. Figures 1 and 2 give the distribution of does in the herds in relation to litter size. Majority of the does gave birth to more than one kid at the first parity (22 out of 39). Does giving birth to singles ceased to exist in the herds after the 2nd parity (Fig. 1) with age limit of 25 months (Fig. 2). From the 3rd parity, only multiple bearing does existed in the herds. As from 33 months of age and parity 4, does continued to exist in the herds if they give birth to triplets. Beyond parity 7 and 40 months of age, the does existed in the herds if they gave birth to quadruplets. The maximum litter size in the herds studied was 4, which was attained as from the 2nd parity with a minimum age of 24 months.

DISCUSSION

The observed structure of the small holder Red Sokoto breeding does appeared to be normally distributed with the middle aged does constituting the majority, while the younger and older does constitute about 20% each of the population. This structure may favour increased herd productivity in terms of the number of kids born since a reasonable proportion of the breeding does aged five years and above. With the normal distribution of the population of breeding does, the generation interval may be kept constant; as opposed to reduced or increased generation interval when the population consists of mainly of younger or older does. Also, the observation of higher parities of 6 and above in the breeding population, has an added advantage of herd productivity and kid viability. Increased litter size, higher birth weights and better mothering abilities are determined at these parities (Chiboka *et al.*, 1988).

The system of culling breeding does based on parity and litter size may have imposed a selection pressure on these goats at the small holder level in favour of multiple births. This appears to be so because the breeding structure studied showed most of the breeding does to be highly prolific (multiple births; 47.3%). Generally, in the indigenous goats, twins have the highest frequency of being born; and multiple birth is also possible (Ngere, 1985). On the whole, African goats are reported to be hardy, prolific and adapted to harsh conditions. (Devedra and Burns, 1970; Adu *et al.*, 1988). Hence the measures, parity and litter size, imposed on the breeding does by the herd owners to improve prolificacy, yielded positive response in this study.

The culling strategy adopted by the herd owners made it possible to limit most of the primiparous does in the herds to less than 12 months of age. As a result, at 25 months of age, majorities of the does are already in their 2nd and 3rd parities; thereby increasing the life time productivity of the goats in terms of viability and litter size. Also, the culling strategy made it possible for litter size of does to increase with parity. Thus, the breeding status of the does was such that a few of the does were in their 1st parity with most of them bearing twins.

The early birth of some of the does in this study, of less than twelve months of age, was similar to the report of Wilson (1982) on age at first kidding in goats, which may be a positive response to the breeding/culling strategies adopted by the herd owners. However, in Nigeria, under institutions or research centers indigenous goats kid for the first time at between 14 and 18 months of age (Adu *et al.*, 1979; Ngere, 1985; Osinowo and Abubakar, 1988).

From the present study, it is evident that under the farmers conditions, does can be as old as 25 months without kidding in the herd. However, such leave the herds at this age.

CONCLUSION

The study had shown a herd structure of 20% (<12 months), 40% (12-25 months), 11.2% (26-39 months) and 20.8% (>40 months) age groupings for the breeding does. Majorities of the does were in their 2nd and 3rd parities. However, the herd structure as observed was influenced by parity and litter size of does. Culling of breeding does begins at 25 months of age, and at parity 2, 4, 7 and 10, respectively.

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