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PERFORMANCE OF SHEEP AND GOATS AT HOUSEHOLD LEVEL: A CASE STUDY OF GOMBE METROPOLIS

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ABSTRACT

Sheep and goats are small ruminants that provide animal protein in the form of meat, milk and other products such as hides and skins as raw materials for agro-allied industries. A survey on factors affecting small ruminants' production in Gombe metropolis was carried out. Fifty households that owned sheep and goats were interviewed with 20 keeping sheep only, 20 keeping goats only and 10 keeping both. Two (2) young animals from each herd/flock were weighed monthly for 9 months, making a total of 100 animal in all. Data collected were analyzed using simple descriptive statistics (frequency and percentage) and analysis of variance. The results showed that 32 percent of farmers were between 20-30 years of age range. The majority of the farmers (64%) were Muslims and 74% were males. The family sizes of 6-10 were the majority (52%). Other ethnic groups apart from Hausa/Fulani own 72% of the animals. Majority of the farmers (88%) were married. Thirty-two (32) percent of the farmers were civil servants. Most of the farmers (44%) had from 1-5 years of experience. About 48% of the farmers owned 1-5 animals per household. Analysis of variance showed highly significant ($P<0.000$) difference in litter of goats (1.90) and sheep (1.24). The percentage population growth rate showed sheep alone (5.40), goats alone (13.97), sheep with goats (24.53) and goats with sheep (34.94). It was concluded that, socio-economic characteristics such as occupation, herd litter size and ownership affected the herd size in the study area. There is need for small ruminants to be given more attention because of their contribution of high quality protein for increasing human population.

Keywords: Sheep and goats, Household level.

INTRODUCTION

Livestock are important elements of the pathway out of poverty for millions of the rural dwellers in Nigeria and other African countries (Adegbola, 1998).Animal husbandry is one of the fastest growing agricultural subsector in developing countries and contributes significantly to agricultural GDP (FAO, 2006). Nigeria is one of the four leading livestock producers in Sub-Sahara Africa (FAO, 2006). According to Osinowo (1999) ruminant production is practice alongside poultry, arable farming, vegetable gardening and tree crops. Livestock plays significant role in the economy of Nigeria like in most developing countries by providing food security, income generation, raw materials and employment among other things (FAO, 2006).

The livestock subsector does not only provide the much-needed animal protein for the ever-growing human population but it also offers employment opportunities for millions of rural

and urban dwellers involved in some form of livestock production and marketing (Belanger and Bredesen,2010). Livestock likewise also play a key role in the lives of poor rural people, providing a major proportion of their cash income, capital assets, draught power, fuel and fertilizer (Bogoro *et al*., 1999). The sale of livestock accounts for more than 30% of the family cash income for small farmers. Sheep and goat production system plays an important role in global economy by creating employment generation and supporting livelihood of small holder farmers in developing countries (FAO, 2006).

Pugh and Rankins (2012) reported that even though some attempts have been made by institutions involved in research and extension of small ruminants to improve their productivity in the country, sheep and goats feeding and medication is often an ignored area and little emphasis has been given to the development of sheep and goats production through research in the past. On the other hand, lack of up-to-date and location of specific information on production is often a major limitation to productivity and improvement endeavours in sheep and goats. To design improvement measures relevant to specific systems and thereby properly respond to the growing domestic and foreign demands for live sheep and goats products, systematic characterization of goat production, marketing systems and performance evaluation is indispensable (Pugh and Rankins, 2012) Therefore assessing the potential of available genetic resources, and identifying and prioritizing the major constraints limiting the traditional sheep and goats production system are immediate tasks in order to carry out research and development strategies (Pugh and Rankins, 2012).

The Federal Ministry of Agriculture (2011) reported in 2016 the Nigeria's' livestock population of 19.5 million cattle, 41.3 million sheep, 72.5 million goats and 28,000 camels Federal Ministry of Agriculture (2016).With a rise in human population and urbanization, the demand for livestock products has been increased throughout the world, so in order to meet the ever increasing demand for livestock products, there is a need to increase livestock productivity by addressing the critical challenges faced by agriculture and animal sectors in the challenging climatic condition (FAO, 2006).

MATERIALS AND METHODS

Study Area

The study area is Gombe metropolis. Gombe lie approximately on latitude 10^0N and longitude 11^0E. it has an annual rainfall of 1000 to 2000 mm per annum (NIMET, 2009). The vegetation largely comprise of drought resistant grasses, legumes and shrubs. There are two distinct seasons the rainy and dry seasons. The soil is loamy and sandy but, others are derived from alleviation and culvert deposit which are well drained and coarse in texture. The temperature ranges between 250C to 360C all year round (NIMET, 2009).

Data collection

The study was conducted in 12 areas within the metropolis and the houses were randomly selected. The study took a period of 9 months. Data were collected through the use of structured questionnaires. A total number of 50 houses (farmers) were interviewed and young sheep and goats, two each from each house were initially weighed. They were subsequently weighed each month for the 9 month study period.

Sampling Procedure

A total number of 50 houses were randomly selected, with 20 houses keeping goats alone, 20 houses keeping sheep alone and 10 houses keeping both sheep and goats (sample population) at the time of study. The questionnaire was personally handled and either the head of the family or the owner of

the goats was personally interviewed. The monthly weighing of the animals was personally done. Some of the animals are free range while others where semi-intensively kept. The information was gathered early in the morning before the animals were allowed out or in the evening when they must have returned from grazing or scavenging. The monthly visit was done at the end of the month within the space of three days each month.

The Socio-Economic Characteristics and Parameters Use

For the purpose of this study, the parameters studied are; Age of respondent, sex of respondent, household size. The total number of animals, weight at initial stage and the corresponding weight gain of the animal under study were obtained. The total number that died, the number that were purchased and the number that were sold were also recorded. This was followed by recording the total number that lambed/kidded and the total number of lambs/kids.

Data Analysis

The data was analyzed using descriptive statistics and analysis of variances. (According to SPSS, 2016).

RESULTS AND DISCUSSION

Table 1 presented the demographic characteristics of sheep and goat farmers. The majority of the farmers (32%) were of the age range 20 - 30 years. This shows that majority of the farmers were in active age. This observation is similar to that of Gefu *et al*., (1982); Ajimohun*et al.*, (2008) and Lamidi *et al.*, (2010). Majority of the farmers (64%) were Muslims and this may reflect the religious distribution of the area. According to sex, 74% of the respondents were males. This result is higher to that of Fapohunda *et al.*, (2003) who reported 42.11% males but, similar to the findings of Okunola, (2002) and Lamidi *et al.*, (2010) who reported 53.0% and 57.58% males respectively. The household sizes 52% have 6-10 persons while 34% have 1-5 persons in their families. (72%) of the farmers were from other tribes (Ethnic group) while only 28% were Hausa/Fulani. This shows that other tribes that are keeping small ruminants were more in number than the Hausa/Fulani in the study area. (88%) of the farmers were married which made it necessary for them to look for extra source of income.

Thirty-two (32%) percent of the farmers were civil servant which suggest that, small ruminants production need strong financial backing for overall good management. Forty-four (44%) percent of the farmers had experience in keeping small ruminants between 1-5 years. This is related to the findings Ajimohun *et al.*, (2008) who reported that about 53.8% have experience between 1-10 years. About forty-eight (48) percent of the farmers had less than six (6) animals per household, followed by 36.7% who owned 6-10 small ruminants per household. This is similar to the findings of Lamidi *et al.*, (2010), Ajimohun *et al.*, (2008), Fagbohunda *et al.*, (2003) and Afta-krah and Renolds (1984) who noted that small ruminants in Nigeria are generally kept as minor farm enterprise. It can therefore be deduced that farmers in the study area were operating at a small scale.

Table 1: Demographic Characteristics of Sheep and Goat Farmers

Characteristics (%)	Frequency	Percentage
a. Age of farmers		
20-30	16	32.0
31-40	14	28.0
41-50	9	18.0
51-60	10	20.0
60 and above	5	2.00
Total	**50**	**100**
b. Religion		
Muslims	32	64.0
Christians	18	36.0
Total	**50**	**100**
c. Sex		
Male	37	74
Female	13	26
Total	**50**	100
d. Household size		
1-5	17	34.0
6-10	26	52.0
11 and above	7	14.0
Total	**50**	**100**
e. Ethnic group		
Hausa/Fulani	14	28.0
Others	36	72.0
Total	**50**	**100**
f. Marital status		
Married	44	88.0
Unmarried	4	8.00
Widow/widower	2	4.00
Total	**50**	**100**
g. Occupation		
Civil servant	16	32.0
Businessmen/women	6	12.0
Retirees	6	12.0
Farmers	2	4.00
Homemakers	8	16.0
Others	12	24.0
Total	50	100
h. Years of experience		
1-5	22	44
6-10	17	34

11-15	6	12
16-20	5	10
Total	50	100
i. Herd/flock size		
1-5	29	48.3
6-10	22	36.7
11-15	6	10.0
16-20	2	3.33
21 and above	1	1.70
Total	60	100

Table 2: showed that those who owned both sheep and goats had more ($P<0.05$) animals than those who owned only sheep and only goats. This suggests that, under good management both sheep and goats can perform well when raised or kept together. That means, there is no negative effect when both are kept together.

Table 2: Ownership Distribution

Parameters	**No. of household**	**No. of animals**	**Mean**
Sheep only	20	148	7.4
Goats only	20	146	7.3
Sheep and goats	10	118	11.6*

Table 3 showed the changes in herd size, due to entry and exit. Entry by birth revealed more goats than sheep and this may be attributed to goats having higher rate of producing twins and triplet's. There is no difference in entry by birth when sheep are alone or with goats, or when goats are alone or with sheep. Purchases skewed in favor of goats, when sheep are together with goats than when they are alone. Exit through deaths showed that there were more deaths in goats when they are alone. There was increase in herd size of both sheep and goats whether alone or together.

Table 4 showed that throughout the period, there was no significant difference in weight gain of sheep and goat between 3 and 6 and between 6 and 9 months. However, for each of the species, there was significant difference ($P<0.000$).

Table 5 showed no effect on age and litter sizes of sheep and goats therefore, it is not significant. However, there are significant differences in litter size between sheep and goat which showed that goat had more litter size than sheep. This assertion is similar to the findings of Adu *et al*, (1979) who reported higher twining rate and fecundity in goats compared to that of sheep.

Table 3: Entry/exit and percentage increase of herd/flock size

Parameters	Sheep only	Goats only	Sheep with goats	Goats with sheep
a. Initial number	7.4	7.3	5.3	6.3
Entry by births	1.7	2.6	1.7	2.6
Purchase	0.55	0.32	1.1	0.6
Exit by deaths	0.7	12	0.6	0.7
Sold	1.15	1.70	0.9	0.3
b. Final number	7.8	8.32	6.6	8.5
c. Increase	0.4	1.02	1.3	2.2
d. Percentage increase	5.40	13.97	24.53	34.92

Table 4: Litter size and weight gain of sheep and goat kept separately or together

Parameter	Sheep alone	Goat alone	Sheep with goat	Goat with sheep
Litter size	1.20	1.82	1.31	2.10
Weight gain (kg) at 3 months	4.90	4.83	5.17	4.72 NS
Weight gain (kg) 3-6 months	6.29	5.72	5.72	5.85 NS
Weight gain (kg) 6-9 months	6.29	5.72	6.56	6.45 NS

Table 5: Effect of age of respondent on litter size of sheep and goats.

Parameter	Sheep	Goats
Age of respondents	Litter size	Litter size
<30	1.29	1.95
30-40	1.05	1.90
40-50	1.33	1.93
>50	1.33	1.80
Mean litter size	1.24	1.90
P	NS	NS

CONCLUSION

Based on the findings of this study, it is concluded that sheep and goat production among farmers in Gombe metropolis were on small scale production. The socio-economic variable such as age, household size, years of experience, occupation, sex, marital status, ethic group and religion can affect the herd size of sheep and goats owned. Therefore there is need for small ruminant to be given attention because of their contribution of high quality protein for the increasing human population.

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