



Effects of Goat Production on the Livelihood of Women in Igabi, Chikun and Kajuru Local Government Areas, Kaduna State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author OA designed the study, wrote the protocol and performed the statistical analysis. Author SB supervised the work. Author OA managed the analyses of the study and wrote the first draft of the manuscript. Authors OA and JKAB managed the literature searches and edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

This study examined the effects of goat production on the livelihood of women based on data from 150 farmers selected purposively and equally from Igabi, Chikun and Kajuru Local Governments Areas of Kaduna State, Nigeria. The objective of the study was to assess the socio-economic effects of goat production on the livelihoods of women in the study area. Data analysis was done using descriptive statistics and Likert scale. The study showed that the effects of goat rearing on the level of living of the women in the study area were positive based on increase in savings, income, household food security and household assets. About 91% of the respondents reported an increase in household income while 83% observed an increase in savings. Increase in household food security was recorded by 91% of the respondents. About 96% of the women recorded an increase in

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household assets. The major constraints encountered by the women in order of importance included loss of goats through death and theft; absence of credit facility; absence of cooperative society and absence of hands-on training on goat rearing. To enhance the potential of goat rearing as a strategy for alleviating poverty in rural communities, concerted efforts should be made by the government and other relevant agencies to raise awareness of recommended practices on goat production through radio and extension advisory services. Credit facilities in form of young goats, high quality feed materials and veterinary drugs should be made accessible to women involved in goat production to encourage the adoption of recommended practices on goat production for increased productivity and better level of living.

Keywords: Goat; production; livelihood; women; Nigeria.

1. INTRODUCTION

There are 65.65 million goats of different breeds in Nigeria being kept by 305,762 farmers giving a national average herd size of 5 goats. The major goat breeds in the country include Red Sokoto, Kano Brown and West African Dwarf. Of the goat population in Nigeria, 39.2% are West African Dwarf while Red Sokoto and Kano Brown constituted 30.4% and 24.5% respectively [1]. Other goat breeds are about 5.9% of the goats in the country. In terms of distribution of goats by States, Katsina State has 7.7% of the goats' population in the country followed by Jigawa (7.5%), Zamfara (6.8%) and Benue (5.5%). About 2.5% of the national population of goats is found in Kaduna State [1].

Women are the most vulnerable of the victims of extreme poverty. Consequently they are primarily concerned with the ownership and management of goats in most developing countries. Ownership of goats allows women to meet family and social obligations such as purchase of clothes, care of sick children and ceremonial costs. In a study on role of women in livestock enterprises in Nigeria, Ayoola and Ayoade [2] reported that the respondents kept poultry, goats and sheep primarily to meet immediate household needs and also to supplement family income. Not much is known about the level of awareness and uptake of management practices on goat production among the women in the study area. Even though the contribution of goat production to improved livelihoods in rural areas has been reported, [3,4] there is a dearth of information on the perception of women on the effects of goat production on their livelihood. It is against this background that this study was conducted in 3 Local Government Areas of Kaduna South to assess the effects of goat rearing on the livelihoods of women in the study areas. The specific objectives of the study were to, describe the socioeconomic and institutional

characteristics of female goat farmers in the study area, it is also to assess the level of awareness and uptake of major recommended practices on goat production and ascertain female farmers' perception of effects of goat rearing on their level of living. Finally the study is to help determine the major constraints to goat production among women in the study area.

2. METHODOLOGY

Kaduna State lies in northwest Nigeria and occupies about 5% of the total land mass of the country with 46,053 km². It is the fourth largest state by area and the third most populous in Nigeria. The State has a population of about 6 million people with about 60% living in rural areas [5]. The rural population density is about 500 persons per km² in the Kaduna/Zaria areas and in the neighboring villages [6]. Kaduna State has an altitude of 500–1000 m above sea level and an annual average rainfall of 1272 mm. Agriculture is the largest employer of labour with about 80% of the population being engaged in farming, though with relatively poor productivity [7]. The State is divided into 23 Local Government Areas (LGAs) including Chikun, Igabi and Kajuru.

The study was conducted in three LGAs of Kaduna State, namely Kajuru, Igabi and Chikun, which were purposively selected on account of the prominence of goat production among women in the areas. Fifty farmers were purposively selected from each LGA, giving a total of 150 respondents. Primary data were collected by means of a structured questionnaire.

Descriptive statistics such as frequency and percentage were used to analyse the data collected. Farmers' perceptions of constraints to goat production were measured on a 4-point Likert-type scale of very serious, serious, not serious, and not a problem with 4, 3, 2 and 1 as assigned weights respectively. In calculating

perception of constraint to goat production, the mid-point values of the scale were added up and then divided by four to obtain a mean score of 2.5. Any mean score that was equal to or greater than 2.5 was perceived by farmers as 'serious' while a mean score that was less than 2.5 was perceived as 'not a problem'.

3. RESULTS AND DISCUSSION

3.1 Socioeconomic and Institutional Characteristics of Women Rearing Goats in the Study Areas

In terms of age, about 37% of the respondents were between 20 and 29 years (Table 1). The respondents in the age range of 30-39 constituted 31% while 22% of them were in the 40-49 years category. This implied that about 89% of the respondents were between 20 and 49 years of age. The women in this age group are economically active and might be more involved in carrying the burden of their households and are under greater economic pressure to meet the needs of their members. It can also be deduced that the age range is indicative of the potential that exists for improved goat production practices since people within this age range would be expected to be more receptive to new innovations, [8].

Majority of the women (93%) were married while the single and those who were separated constituted 4.6% and 2% respectively. With respect to household size, majority of the respondents (51%) had 6-10 people followed by 30% (1-5 people) and 19% (more than 10 people). It is expected that the greater the household size the greater the pressure to respond to the needs of household members.

Majority of the respondents (55%) had no formal education while 35% of them had primary school education. About 9% of them had secondary school education. Access to education is related to the capacity of women to use appropriate information and skills for enterprise development and generation of income.

In terms of years of experience in goat production, majority of the respondents (47%) had been rearing goats from 0 to 4 years. The other respondents (35%) had 5-9 years of experience while 11% of them had 10-14 years. This agreed with the work of [8] that with majority of the respondents being illiterate, experience rather than education, helped the stock owners in

their managerial ability. Similarly, while studying the socioeconomic and production characteristics of Sheep and goat farming in Imo State, [4] found that 62.7% of the respondents had 6 to 10 years experience in small ruminant production.

Table 1. Socioeconomic characteristics of respondents (n = 150)

Variable	Frequency	Percentage
Age		
<20 years	4	2.67
20-29	55	36.67
30-39	46	30.67
40-49	33	22.00
50-59	6	4.00
60-69	4	2.67
>70	2	1.33
Marital status		
Single	7	4.67
Married	140	93.33
Separated	3	2.00
Level of education		
No formal education	83	55.33
Primary school education	53	35.33
Secondary school education	14	9.34
Post secondary education	0	0.00
Household size		
1-5 people	45	30.00
6-10 people	77	51.33
>10	28	18.67
Years of experience in goat production		
0-4	71	47.33
5-9	52	34.67
10-14	17	11.33
15-19	6	4.00
20-24	4	2.67
Size of goat herd		
<5	110	73.33
5-10	33	22.00
11-15	7	4.67
16-20	0	0.00
>20	0	0.00
Goat production system		
Free range	4	2.67
Semi-intensive	145	96.67
Intensive	1	0.67
Ownership of mobile phone		
Yes	66	44
No	84	56

In terms of flock size, about 73% of the women producing goats in the study area had less than 5 goats while 22% of them had a herd size of 5 to 10. Only 5% of the respondents had 11 to 15 goats. This agreed with the work of [9] who

reported an average flock size of between 2 and 4 for sheep and goats in South-eastern Nigeria. The small flock size confirmed that small ruminants are not kept in commercial sizes and are actually kept to augment family income. [10] asserted that small ruminants are kept as an adjunct to the main business of cropping. Lack of training in small ruminant production, poor market infrastructure and absence of credit facilities might have affected the expansion of small ruminant production.

About 97% of the respondents practiced semi-intensive system of goat production while 3% of them practiced free range system. This is contrary to the report from Northern Nigeria that small ruminants were mostly managed under extensive system [10]. The prominence of semi-intensive system of goat production in the study area might be an attempt by the respondents to curtail the high losses due to accident and theft associated with the free range system. About 44% of the respondents owned mobile phones. In recent years, ownership of mobile phones has become a key factor in farmers' access to subsidized inputs for agricultural production in the country.

Majority of the respondents (35%) accessed information on goat production from other women involved in goat production while radio was the source of information on goat production for 30% of the respondents. Others sources of information included cooperative groups (13%), husband (9%), television (4%) and extension agent (4%). About 5% of the respondents did not have access to any sources of information on goat production.

The institutional characteristics of the respondents are presented in Table 2. About 51% of the respondents were members of women farmers' association and 49% were non-members. In terms of sources of finance for goat production, majority of the respondents relied on personal savings (97%). Other sources of finance included friends and relatives (2%) and cooperative society (1%). This agreed with the finding of [8] that majority of farmers in southwest Nigeria obtained finances for ruminant production from friends and personal savings. Funds from relatives and friends cannot be relied to significantly boost agricultural production, therefore financial institutions need to package more farmer friendly loans.

The dominant sources of information on goat production among the respondents were 'other

women rearing goats' (35%), radio (31%) and cooperative group (13%). Dearth of quality information on best practices on goat production would definitely hinder growth and discourage further investments in goat production, thus underscoring the dire need for quality advisory services. The bulk of the respondents (47%) did not have access to extension agents at all whereas 26% of them met with extension agents once in a year. This implied that the flow of advisory services and technical knowledge on goat production from the relevant public agencies to the women in the study areas would be limited and consequently goat production efforts would be negatively affected. Inadequate extension services in Nigerian agriculture has been identified as a major limiting factor in agricultural production [11]. Number of extension contacts has been shown to have positive effect on the adoption of recommended practices on agricultural production [12]. There may also be an element of gender bias in the attention given by public sector extension agents to women who are involved in agricultural production.

The major source of animal health care services among the respondents (39%) was the veterinary clinic operated by the government. Other sources of animal health care services in order of importance were extension agent (15%), indigenous knowledge by other farmers (15%) and indigenous knowledge by individual farmer (6%). However, 26% of the respondents do not have access to any sources of animal health care services.

3.2 Level of Awareness and Uptake of Major Recommended Practices on Goat Production

Between 48% and 98% of the respondents were aware of the recommended practices in goat production (Table 3) with awareness on improved housing structure having the highest (98%) while awareness of goat rearing for milk production was lowest among the respondents (48%). Awareness of other recommended practices was above 70%. In terms of overall awareness index for each LGA, Igabi had the highest level of awareness (85%), followed by Kajuru (82%) and Chikun (74%).

The assessment of adoption of recommended practices on goat production showed that the level of adoption was between 21 and 74% among the respondents (Table 4). Adoption of control of ecto-parasites was the highest with

74% while adoption of goat rearing for milk was lowest among the respondents (48%). The high adoption rate of control of ecto-parasites might be attributed to the use of local knowledge which is affordable, accessible and easy to apply. About 73% of the respondents adopted the recommendation on housing made of bamboo or mud with thatched roof. This is in agreement with the report of [4] that thatched roof was the dominant form of housing among sheep and goat farmers in Imo State. Apart from goat rearing for milk and processing of goat leather, adoption of other recommended practices was above 61%. In terms of overall adoption index for each LGA, Kajuru had the highest level of adoption (75%), followed by Igabi (54%) and Chikun (37%).

3.3 Effects of Goat Rearing on the Livelihood of Women

About 91% of the respondents reported an increase in their household income (Table 5). Others reported no change in their income (6%) while others reported a decrease in their income (0.67%). However, 2.67% of the respondents reported no income on account of goat rearing. This is in harmony with the findings of [2] that small ruminants served as an investment and source of revenue to boost family income. Majority of the respondents (83%) observed an increase in savings whereas about 11% of them had no savings since they have been involved in goat rearing. There was no change in the savings of 6% of the respondents. [13] affirmed that opportunity for savings was a major motivation for ruminant production. Increase in household food security was reported by 91% of the respondents on account of goat rearing. Others observed no change in household food security (7%) and decrease in household food security (1.33%). Majority of the respondents (96%) reported an increase in household assets while 3.3% of them had no change in household assets. Other had no household assets (0.67%).

3.4 Major Constraints to Goat Production among Women in the Study Areas

The study elicited the views of the respondents on the major issues constraining goat production in the study areas. Of the 13 constraints presented to the respondents, 10 were acknowledged and 3 were disregarded (Table 6).

The major constraints in order of importance included loss of goats through death and theft; absence of credit facility; absence of cooperative society and absence of hands-on training goat rearing. The respondents did not agree that poor returns from sales of goats, lack of feed supplementation during dry season and low demand for goat meat were major constraints to goat production.

Table 2. Institutional characteristics of respondents (n = 150)

Variable	Frequency	Percentage
Membership of women farmers' association		
Yes	77	51.33
No	73	48.67
Sources of finance		
Personal savings	145	96.67
Bank credit	0	0.00
Friends and relatives	3	2.00
Cooperative society	2	1.33
Source of information on goat production		
Radio	46	30.67
Television	6	4.00
Extension agent	6	4.00
Other women	52	34.67
Cooperative group	19	12.67
Husband	13	8.66
None	8	5.33
Number of extension Contacts		
Twice in a month	6	4.00
Once in a month	21	14.00
Once every three months	2	1.33
Twice in a year	11	7.33
Once in a year	39	26.00
None	71	47.33
Source of animal health care services		
Extension agent	22	14.67
Veterinary clinic	58	38.66
Local knowledge by farmer	22	14.67
Local knowledge by other farmers	9	6.00
None	39	26.00

Table 3. Awareness of recommended practices on goat production among women in the study area

Recommended practice on goat production	Frequency (n=150)				Percentage
	Igabi	Kajuru	Chikun	Total	
1. Housing for goats made of bamboo or mud with thatched roof	49	48	50	147	98.00
2. Vaccination of goats against PPR	38	43	50	131	87.33
3. Use of mineral salt licks	33	41	43	117	78.00
4. Control of ecto-parasites	39	45	46	130	86.67
5. Feed supplementation in dry season	50	48	29	127	84.67
6. Goat milk production	40	20	12	72	48.00
7. Goat leather production	47	42	29	118	78.67
Total	296	287	259	842	80.19
Overall awareness index	84.57	82.00	74.00	80.19	

Table 4. Uptake of recommended practices on goat production among women in the study area

Recommended practice on goat production	Frequency (n=150)				Percentage
	Igabi	Kajuru	Chikun	Total	
1. Housing for goats made of bamboo or mud with thatched roof	47	38	25	110	73.33
2. Vaccination of goats against PPR*	32	42	17	91	60.67
3. Use of mineral salt licks	22	42	27	91	60.67
4. Control of ecto-parasites	33	34	44	111	74.00
5. Feed supplementation in dry season	47	47	4	98	65.33
6. Goat milk utilization	2	28	1	31	20.67
7. Processing of leather from goats	6	33	12	51	34.00
Total	189	264	130	583	55.52
Overall uptake index	54.00	75.43	37.14	55.52	

*PPR is Peste des petits ruminants

Table 5. Perceived effects of goat rearing on livelihood of respondents

Variable	Frequency (n = 150)			Total	Percentage
	Igabi	Kajuru	Chikun		
Changes in household income					
Increase in income	45	42	49	136	90.67
No change in income	1	8	0	9	6.00
Decrease in income	0	0	1	1	0.67
No income	4	0	0	4	2.67
Changes in savings					
Increase in savings	31	44	50	125	83.33
No change in savings	3	6	0	9	6.00
Decrease in savings	0	0	0	0	0.00
No savings	16	0	0	16	10.67
Changes in household food security					
Increase in household food security	48	39	50	137	91.33
No change in household food security	2	9	0	11	7.33
Decrease in household food security	0	2	0	2	1.33
No household food security	0	0	0	0	0.00
Changes in household assets					
Increase in household assets	47	47	50	144	96.00
No change in household assets	3	2	0	5	3.33
Decrease in household assets	0	0	0	0	0.00
No household assets	0	1	0	1	0.67

Table 6. Major constraints to goat production among women in the study area

Goat production constraint	Frequency					Weighted Sum					Weighted mean	Remark
	Very serious	Serious	Not serious	Not a problem	Total	Very serious	Serious	Not serious	Not a problem	Total		
1. Loss of goats through death and theft	64	70	12	4	150	256	210	24	4	494	3.29	Problematic
2. Absence of credit facility	59	63	27	1	150	236	189	54	1	480	3.20	Problematic
3. Absence of Goat Rearing women cooperative	59	57	29	5	150	236	171	58	5	470	3.13	Problematic
4. Absence of hands-on training on goat rearing	20	101	29	0	150	80	303	58	0	441	2.94	Problematic
5. Poor growth of goat breed	32	73	36	9	150	128	219	72	9	428	2.85	Problematic
6. Incidence of Ecto-parasites	25	76	47	2	150	100	228	94	2	424	2.83	Problematic
7. Absence of animal health care services	31	67	43	9	150	124	201	86	9	420	2.80	Problematic
8. Lack of access to extension agents	22	93	34	10	150	88	279	68	10	445	2.80	Problematic
9. Incidence of intestinal worms	7	82	59	2	150	28	246	118	2	394	2.63	Problematic
10. Incidence of PPR	11	69	66	4	150	44	207	132	4	387	2.58	Problematic
11. Poor returns from sales of goats	7	67	57	19	150	28	201	114	19	362	2.41	Not problematic
12. Lack of feed supplementation during dry season	5	51	75	19	150	20	153	150	19	342	2.28	Not problematic
13. Low demand for goat meat	15	7	78	50	150	60	21	156	50	287	1.91	Not problematic

4. CONCLUSION AND RECOMMENDATIONS

In conclusion, the study showed that the perceived effects of goat rearing on the level of living of the women in the study area were positive based on increase in savings, income, household food security and household assets reported by a large majority of the respondents.

To enhance the potential of goat rearing as a strategy for alleviating poverty in rural communities, concerted efforts should be made by the government and other relevant agencies to raise awareness of recommended practices on goat production through radio and extension advisory services. Credit facilities in form of young goats, high quality feed materials and veterinary drugs should be made accessible to women involved in goat rearing to encourage the adoption of recommended practices on goat production for increased productivity and better livelihoods of the women farmers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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