



TRADITIONAL GOAT PRODUCTION AND INCOME GENERATION OF GOAT FARMERS IN ZANGON-KATAF LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA

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ABSTRACT

The study was conducted in Zangon-Kataf Local Government Area of Kaduna State, Nigeria. Multi-stage random sampling procedure was used to select 50 farmers used for the study. Structured questionnaire was used to collect data required for the study. Data collected were analyzed using qualitative and quantitative techniques. The result established that goat farmers in the study area were relatively young with a mean age of 38 years. Literacy level and household size were high. Enterprise variables established that the farmers were experienced and that goat production was an income generating enterprise with positive net profit and a mean net income of ₦2,719.00, that is, \$7.769 at ₦350 per dollar. Return on investment (ROI) was established to be positive with a value 0.13 implying that goat production in the study area was profitable. The constraints to goat production in the study area were poor road network, pest and diseases, among others. It was recommended that, campaign and sensitization of the profitability of goat production should be carried out. Also, non-governmental organizations, government and financial institutions should assist goat producers by providing funds in form of soft loan, credit facilities and needed capital to improve their financial base and increase their production capability.

Keywords: Goat, Income generation, Production, Profitability, Traditional.

INTRODUCTION

Agriculture is the only sector of the economy that provides the basic essentials of life. Household dietary daily protein need is derived from this sector of the economy. Protein is an important component that is crucial for the body and human development (Kaine and Ume, 2017). Absolute protein requirement of the body contains a high amount of amino acids in exact amount and percentage. Household protein requirement is derived from plant and animal origin. Plant proteins requirement of the body are obtained from peas and legumes while animal proteins are derived from both micro-livestock and macro-livestock. The micro-livestock sources include snails, rabbits, crass cutter and fisheries among others while the macro-livestock include such animals as goat, sheep, cattle and pigs (Kaine, 2018).

Livestock production both at small scale and commercial level have been reported to be a veritable source of income and employment generating activities among large proportion of youths in Nigeria and African in general. According to Antonio and Silver (2011), the demand for livestock is likely to be doubled within the next 20 years due to urbanization,



increase in world population and economic growth. In line with this, the authors opined that excellent opportunities exist for goat producers and marketers.

Considering the livestock farmers especially small-holder farmers, livestock production is essential in provision of food and food security, raw materials, traction power, source of savings and investment, cash security, social and cultural identity among others (Lugman *et al.*, 2013). Adepoju (2008) opined that the livestock sector is an important segment of Nigeria economy as it is the major source of animal protein such as meat, milk and egg that are rich in the essential amino acids that are required for efficient and effective functioning of the body systems. The author further added that this sector of agriculture is also essential in the provision of raw materials such as wool, hides and skin among others that used for the production of clothing, shoes, jackets and rugs among others.

Among the macro-livestock, goats have been reported to be one of the main meat producing animals in developing countries with high domestic demand (Okewu and Iheanacho, 2015). The importance of goat has been documented. Prasad (2010) and Kumar (2017) reported that goat is an important livestock in terms of provision of milk, skin, manure and fibre. It is in line with this that Odunsi *et al.* (2005) opined that goat is often regarded as the poor man's cow due to its ability to provide the much needed quantity of milk required for household consumption.

Researches has shown that goat form the most important constituent of the livestock sector that is extensively distributed in Nigeria. Shahibaz (2015) observed that goat possess certain inherent characteristics that keep it above board among other livestock. Such traits include: the docile nature, ability to survive in nutritional harsh environmental conditions where others cannot survive, being able to survive on supplementary feeds or fodder, not requiring expensive structures, easy to handle by small holder farmers among others. Despite these features, it is not certain that smallholder farmers in the study area are breaking even. Also, many studies have been conducted in respect of goat production, marketing and processing in the study area, but little or nothing has been done with regards to traditional goat production technology and income generation of small-holder goat farmers in Zangon-Kataf Local Government Area of Kaduna, Kaduna State, Nigeria. It was against this background that the study was conducted to determine the socio-economic characteristics; ascertain the goat enterprise characteristics; determine the costs and return associated with goat production; and estimate the return on investment as well as the constraints to goat production in the study area.

MATERIALS AND METHODS

The Study Area

The study was conducted in Zangon-Kataf Local Government Area (LGA) of Kaduna State, Nigeria. Zangon-Kataf Local Government Area is bounded in the north by Kajuru LGA, in the west by Kachia LGA, in the East by Kauru LGA and in the South by Jema'a LGA. The LGA has a total population of 325,861 comprising of 130,344 males and 195,517 females (NPC, 2006). Total projected population figure in the year 2018 at a growth rate of 3% was estimated to be 475,542 people. The inhabitants of the LGA are predominantly farmers



involved in crops and animal production. The major crops produced include: maize, rice, beans, groundnut, and soybeans among other. Animals produced include: goat, cattle, pig and poultry (such as chicken, guinea fowl and pigeon). The Local Government Area is one of the few areas in Kaduna state with high goat populations due to its climatic conditions that tend to favour goat production (Ajayi, 2011).

Sampling Procedure and Sample Size

Sampling procedure used for this study was the multi-stage random sampling procedure. This involved the selection of communities and respondents that were used for the study. The first stage involved the selection of communities. Five (5) communities were randomly selected and used for the study. The second stage involved the selection of goat farmers. Ten (10) goat farmers were randomly selected, from each of the selected communities giving a sample size of 50 goat farmers that were used for study.

Method of Data Collection

Primary source of data was used to collect information required for the study using well-structured questionnaire that was administer to 50 sampled smallholder goat farmers. Interview schedules were also used to augment the information sought by the questionnaires.

Analytical Techniques

Data collected were coded and analyzed using both quantitative and qualitative techniques. The gross margin analysis was specified as:

$$GM = TR - TVC \quad \dots(1)$$

$$TC = TVC + TFC$$

$$NPM = GM - \text{Depreciation}$$

where;

GM = Gross margin

TR = Total revenue (N)

VC = Variable cost (N)

NPM = Net profit margin

Return on investment (ROI) used was obtained by determining the ratio of net profit, dividing it by the total cost of production and multiplied by 100. The return on investment was used in this study to express revenue as total investment (Kaine, 2018; and Nwaobiala and Kaine, 2016). The derived ROI equation below was applied:

$$\text{Return on Investment (ROI)} = \frac{\text{Net profit (revenue) per annum}}{\text{Total Cost incurred per annum}} \times \frac{100}{1} \quad \dots(2)$$

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

The socio-economic characteristics discussed include: gender (sex), age, marital status, educational level and household size. Sex distribution of small-holder goat farmers in the study area was an important factor considered, studied and was presented in Table 1. The analysis of the gender indicated that 30(60%) of the goat farmers were males while 20 (40.00%) were females. This showed that women participated in the goat production in the study area. It also



implied that goat production in the study area was not gender specific. The percentage distribution of women in goat production was however less than that of male. This finding was in line with that of Ekong (2003) who observed that women play minimal roles in farming. The age distribution of respondents was determined and presented in Table 1. The result showed that majority 60(32%) of the famers were within the age range of 36-45 with a mean age of 38 years. The mean age of 38 years that was observed in this study implied that goat farmers in the study area were in their active age and were actively involved in goat production. This mean age observed in this study was however; lower than the mean of 40 years observed by Kaine (2018). Kaine and Chukwuma (2017), however, observed a mean age of thirty-nine (39) years. This result was in line with the findings of Akinbile (2007) which reported that population within this age group was productive, energetic and constitutes active work force in any community engagement. Kaine (2018) and Fakoya and Daramola (2005) also observed that farmers within this age brackets were more active and receptive to technological changes. The authors further added that the farmers were more innovative, motivated and adaptable individuals who can apply wisdom to cope with farming challenges.

Marital status of goat farmers in the study area was studied and determined. The result indicated that most of the famers: 30(60%) were married, 14(28%) were single, 4(8%) were widows(er) while 2(4%) were divorced (Table 1). It implied that majority of goat farmers or producers in the study area were likely to be more responsible and dedicated in their goat farming enterprise. Ekong (2003) pointed out that marriage in our society was highly cherished. Fakoya (2000) and Oladoja *et al.* (2008) on the other hand asserted that marriage confer some level of responsibility and commitment on individuals who were married.



Table 1: Socio-economic Characteristics of Respondents (n = 50)

Variables	Frequency	Percentage	Mean
Sex			
Male	30	60.00	
Female	20	40.00	
Age group (years)			
16-25	7	14.00	
26-35	14	28.00	
36-45	16	32.00	38.3
46-55	9	18.00	
56 and above	4	8.00	
Marital Status			
Single	14	28.00	
Married	30	60.00	
Divorced	2	4.00	
Widow(er)	4	8.00	
Education level			
Secondary	18	36.00	
Tertiary	32	64.00	
Household size			
1-3	5	10.00	
4-6	23	46.00	
7-9	15	30.00	6.5
10-12	6	12.00	
13 and above	1	2.00	

Source: Field survey (2019)

The education attainments of small-holder goat farmers in the study area were considered, studied and presented in Table 1. The result of the educational level attained showed that literacy level was high as all the goat farmers in the study area had one form of education or another. A detailed analysis of the literacy level showed that majority, 32(64%) of the goat producers in the study area had tertiary education while 18(36%) attained secondary education. This implied and ascertained that literacy level was high. Olaleye (2000) reported that education was an important requirement, especially in the acquisition of knowledge in various human endeavours. This result was inconsonance with *a priori* expectation as high educational status was expected to influence positive growth and development of the society at large.

Household sizes were important variables in determining family labour among farm families. The result of the household size as indicated in Table 1 revealed that 23(46%) of the farmers had household sizes range of 4-6 with a mean household size of seven (7). This implied that household size was large. Large household size could led to the availability of family labour for their various livelihood activities including farming thereby easing the pressure on the family head on the need for more labour on the farm (Kaine, 2018) and Kaine and Ume (2019). They also added that cost of production was also reduced through the use of family labour. Kotze (2003) opined that the number of people in a household had a significant effect



on the available resources. It could either increase the supply of family labour or reduce the capital available for production activities owing to demand for capital by members of that household including dependents. Kaine (2018) observed that large household size on the other hand may exert pressure on the finances of household heads which may lead to external sourcing of funds to meet up with the domestic obligations. Onemolease (2005) also reported that large household size reduces economic welfare of households.

Enterprise Characteristics of Goat Farmers

The enterprise or production characteristics of goat farmers in the study area was studied, determined and presented in Table 2. The results revealed that majority 47(94%) were members of production association while 3(6%) were not members of any production association.



Table 2: Enterprise Characteristics of Goat Farmers

Variables	Frequency	Percentage	Mean
Membership of association			
No	03	6.00	
Yes	47	94.00	
Benefits Derived from Association			
No response	23	46.00	
Savings	02	4.00	
Loans/grants	08	16.00	
Teaching of improved technologies	17	34.00	
Source of income			
Livestock sales	19	38.00	
Crop sales	19	38.00	
Charcoal sales	07	14.00	
Trading	05	10.00	
Years of goat production			
1-5	13	26.00	
6-10	16	32.00	
11-15	16	32.00	
16-20	04	8.00	
21 and above	01	2.00	
Number of goats (farm size)			
1-9	11	22.00	
10-19	25	50.00	
20-29	12	24.00	
30-39	01	2.00	
40 and above	01	2.00	
Source of credit			
Family	19	38.00	
Friends	02	4.00	
Cooperatives	27	54.00	
Government Agencies/Ministries	02	4.00	
Received financial support			
Yes	20	40.00	
No	30	60.00	
Amount of support received (₦)			
Received nothing	30	60.00	
Less than 50, 000	06	12.00	
51, 000 - 99, 999	03	6.00	
100, 000 – 149, 999	01	2.00	₦51,089.86 (\$146.00)
150,000- 199, 999	04	8.00	
200, 000 and above	06	12.00	
Source of labour			
Family	26	52.00	
Hired	23	46.00	
Cooperative	01	2.00	

Source: Field survey (2019)



Analysis of the benefit derived was further determined and the result indicated that 27(54%) of the farmers benefited from being a member of production association. Source of income was an important variable in goat production. It was studied and represented in Table 2. The result revealed that major sources of income as indicated by 19(38%) and 19(38%) were derived from livestock and crops respectively. A detailed analysis of the sources of income as indicated in Table 2 showed that farmers were also involved in off-farm and on-farm income generation. Kaine (2018) and Kaine and Ume (2019) observed that off-farm income generation was a veritable coping strategy that tend to assist farmers to generate more income and meet up with livelihood needs. Farming experience was determined and presented in Table 2. The result indicated that majority 49(98%) had goat farming experience of between 1-15 years. A mean farming experience of 19 years was observed. This implied that the small-holder goat farmers in the study area were well experienced. Farm size (numbers of goats) of the respondents was determined and presented in the Table 2. The result showed that 11(22%) had farm size range of 1-9 goats. The result also revealed that 25(50%) and 12(24%) had a farm size range of 10-19 and 20-29, respectively. The result implied that the goat producers or farmers in the study area were small holder goat farmers.

Source of credit was also determined and presented in Table 2. The result indicated that majority 27(54%) of the goat farmers in the study area sourced their credit through co-operative. The result further revealed that 19(38%) obtained their credit from family source while the remaining 4(8%) either sourced their credit from friends or government agencies. The study also determined the level of support or assistance received by goat producers or farmers in the study area.

The result of Table 2 also indicated that 30(60%) of the farmers had no financial assistance while 20(40%) had financial assistance. A detailed analysis of the amount received showed that 20(40%) of the goat farmers obtained financial assistance that ranged between ₦50,000.00 and ₦200,000.00 (\$142.86 and \$571.43) with a mean amount of ₦51,089.86 (\$146.00). The result of the sources of labour also revealed that majority 26(52%) used family labour while 23(46%) and only 1(2%) used hired labour and co-operative labour, respectively.

Costs and Return Analysis

Profitability of goat production was determined and presented in Table 3. The result revealed that total cost (TC) of production was ₦79,221.00 (\$226.35) while the total variable cost (TVC) was ₦72,453,000 (\$207.01). The result of the net profit was positive with a net income (NI) of ₦10,879.00 (\$31.01) per month with a mean income of ₦2, 719.00 (\$7.80). This result however is not in consonance with that obtained by Ogunniyi (2010) who reported a mean income of ₦25,733.13. The mean income of ₦2,719.00 (\$7.80) obtained in this result implied that the goat producers or farmers in the study area were low income earners with a mean income of ₦126, 000.00 (\$360.00) per annual. The result further revealed that the total variable cost (TVC) (₦72,453) (\$207.01) formed the major components of the cost item representing 91% of the total cost of production. Return on investment (ROI) determined was positive with a value of 0.13 indicating that goat production in the study area was profitable.



It also implied that for every ₦1.00 invested in goat farming in the study area, there was a return of 0.13k indicating a positive return on investment. Bamigboye *et al.* (2017) in study conducted on the profitability of goat marketing in Ado Ekiti Metropoli opined that goat marketing is profitable.

Table 3: Profitability Analysis of Goat Production

Items (variables)	Mean per farmer (value)/month	Mean/goat (value)
No. of goats sale/annum	4.00	-
Average price/goat	22,525.00	-
Revenue	90,100.00	22,525.00
Variable costs		
Drugs cost	3,008	752.00
Supplement cost	10,020.00	5,505.00
Feed cost	48,200.00	12,050.00
Labour	420.00	105.00
Water cost	10,500.00	2,625.00
Transport cost	305.00	76.25
TVC	72,453.00	18,113.25
FC	6,768.00	1,697.00
GM	17,647.00	4,411.75
NI	10,879.00	2,719.00
ROI	0.13	

Source: Field survey (2019)

Constraints to Goat Production

Goat producers or farmers in the study area were faced with various forms of constraints. Table 4 revealed that majority 41(82%) of the ranked poor road network as first among the constraints in this sequence. The result also showed that 37(74%) of the respondents ranked problem of disease as second, inadequate finance was ranked as third by 36(72%) of the goat producers/farmers in the study area, price fluctuation thirty-two (32) (64.00%) as the fourth, lack of credit facilities 32(64%) was ranked as fifth, while high cost of 29(58%); and lack of capital, marketing problem, input acquisition and management problem were ranked: 7th with 23(46%), 8th with 22(44%), 9th with 20(40%) and 10th with 16(32.00%), respectively.



Table 4: Constraints to Goat Production

Constraints (variables)	Frequency (F)	Percentage	Rank
Poor road network	41	82.00	1 st
Problem of disease pest	37	74.00	2 nd
Inadequate finance	36	72.00	3 rd
Price fluctuation	32	64.00	4 th
Lack of credit facilities	32	64.00	5 th
High cost of transport	29	58.00	6 th
Lack of capital	23	46.00	7 th
Marketing problem	22	44.00	8 th
Inputs acquisition	20	40.00	9 th
Management problem	16	32.00	10 th

Source: Field survey (2019)

CONCLUSION AND RECOMMENDATIONS

The study revealed that goat production in the study area was not gender specific and that goat farmers and producers were relatively young and well experienced in the enterprise. It was also revealed that goat farmers/producers were small holder farmers and low income earners. The study also found out that variable cost items formed the major items of the cost components. Goat production or farming in the study area was also revealed to be profitable with a positive return on investment. Numerous challenges were identified to be problems facing goat production in the study area. Some of these include: poor road network, problems of diseases and pest, lack of credit facilities among others. It is hoped that if the recommendations given in this study are taken seriously, goat farmers/producers in the study area will not only increase their output and income but will also enhance their standard of living. Based on the findings of the study, the following recommendations were made:

1. The result showed that goat farmers/producers in the study area also derived their income from non-farm enterprise. Intensive off-farm or non-farm income generation is therefore recommended.
2. Goat farmers/producers in the study area were revealed to be small holder farmers. The recommendation was that goat farmers/producers in the study area should pull their resources together to enjoy the benefit of large scale production.
3. The result also showed that majority of goat farmers/producers in the study area had no financial assistance, it is recommended that government and non-governmental agencies/organization in charge of agricultural policy and planning should put in place policy implementations that will favour goat farmers/producers.
4. Since the result showed that expenses on variable cost items formed the major cost components, a reduction in the use of the variable cost items was recommended. It was also recommended that alternative and cheaper means of production involving reduction in the use variable cost items should be adopted.
5. The study also revealed that goat production in the study area was profitable. It was recommended that campaigns on the economics or profitability of goat production should be carried out. This will help to increase the awareness and involvement of more youths in goat production /farming, reducing employment and rural-urban migration. A number of problems were identified as obstacles to goat farming or production in the study area.



Notable among these were: poor road network, problem of disease and pest, lack of credit facilities among others. Government intervention in the provision rural infrastructure was recommended. On-farm training of goat farmers/producers on how to handle problems of pest and diseases was also recommended. It was also recommended that the provision of conventional bank credit facilities at lower interest rate and relaxed terms of borrowing should be put in place.

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