

EFFECTS OF SOCIO-ECONOMIC FACTORS ON SMALL RUMINANT PRODUCTION IN OHAFIA AGRICULTURAL ZONE OF ABIA STATE, NIGERIA

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ABSTRACT

The study investigated the socio-economic factors affecting small ruminant production in Ohafia Agricultural Zone of Abia state. Specifically the study examined the socioeconomic characteristic of the small ruminant farmers, management system of production, estimated the net return of the enterprises, determinants of small ruminant production and identify constraints militating against small ruminant animal production the study area. A multi stage sampling technique was used to sample for eighty (80) respondents from Bende and Ohafia local government areas, forty respondents from each respectively. Structured questionnaire was used to collect data for the study. Data collected were analyzed using descriptive such as frequency and percentages. More so gross margin and regression models were also used. Results of the study showed that the respondents had a mean age of thirty –nine (39) years. About 57.5% were males, 56.3% were married, 98.5% had one form of education or the other, a yearly income of ₦ 68,438 was estimated. The gross margin estimate showed that the enterprise was profitable. The F-ratio was statistically significant at 5%, socio-economic characteristics such as age, household size, income and rearing experience, were statistically significant at various level and were the major factor that influenced small ruminant production. Major constraints identified include; insufficient fund, disease incidence, and others. The study therefore recommends that younger people should be encouraged into small ruminant production because small ruminant animal production is laborious. The younger people are energetic to take up the task involved. The farmers should also form cooperative societies to increase their access to credit facilities.

Key words: socio-economic, characteristics, profit, small ruminants, production

INTRDUCTION

Livestock production is a very important segment of agriculture. It is referred to as one or more domesticated animals raised in agricultural settings to produce commodities such as food, fiber and labour. Apart from providing food, it serves as a source of employment and income generation to rural farm families. Livestock may be raised for subsistence or for profit (Enechi, *et al.*, 2012). Livestock not only plays a significant role in the socio-cultural aspects of the people but also, helps to balance human nutrition (Adam *et al.*, 2010). Furthermore, Baruwa (2013) also reported that they ensured the food security of a household, often being the only asset possessed by a poor family. In difficult situations, such as crop failure or family illness, sheep and goats can be sold and the proceeds used to purchase food and drugs for the family. The study also opined that dairy goats are good species for combating poverty and economic development in developing countries. Small ruminants are important domestic animals

representing valuable resources in tropical livestock systems. Among all the livestock that make up the farm in Nigeria, small ruminants comprising sheep and goats constitute the farm animals largely reared by families in the country agriculture's system. Nigeria has a population of 34.5 million goats and 22.1 million sheep (Suleiman *et al.*, 2015). Despite the importance of livestock in the economy and the large number of the different species, Nigeria has not been able to provide animal protein sufficient enough in quantity and quality to meet the per capital animal protein requirement of the citizens. This could be attributed to the production system and the factors that influenced the production of these small ruminant animals. Technical Centre for Agriculture and Rural Cooperation (CTA) (2009) reported that farm animals such as sheep, goats, pig, and rabbits are largely produced at subsistence level on small scale production. Especially in the eastern part of the country where livestock production is not taken

as a means of livelihood like arable crop production when compare with the northern part where small ruminant animal production is carried out on commercial basis. Capital input which can be in the form of feed, stock of animals, housing and new breeding technologies could constitute a limiting factor in increasing the level of livestock production, especially in the intensive system of production. More so, majority of the small ruminant farmers are small scale farmers, limited in resource base and operation, due to low income. The paper therefore seeks to determine the extent socio-economic factors influenced small ruminant production in the study area. specifically the study (i) examined socio-economic characteristics of the respondents, (ii) determined the management practice used by farmers, (iii) ascertained the net return of small ruminant production, (iv) determined the effect of the socio-economic characteristics on small ruminant production, and (v) identified constraints to small ruminants production in the study area.

MATERIALS AND METHODS

The study was conducted in Ohafia agricultural zone Abia state, Nigeria. The zone is made up of two Local Government Areas (LGAs) namely Bende and Ohafia. Bende LGA is located on latitude $5^{\circ}34'$, 5.567°N and longitudes $7^{\circ}38'$, 7.633°E . It has a land mass of 6320 km^2 and an estimated population value of about 6320 National Bureau of Statistics (NBS, 2016). Ohafia LGA is situated on latitude $5^{\circ}35'$, 5.617°N and longitude $7^{\circ}8'$, 7.833°E with a landmass of 715.07 km^2 and an estimated population value of about 322,200 (NBS, 2016). The indigenes of the zone are Igbo speaking and their major occupation is farming. They are involved in crop and small ruminant animal production. Some of the crops produced include; rice, cassava, plantain yam and others. More so small ruminant such as sheep and goat are reared by the farmers. Primary data source was used to generate data for the study. Data were collected through the use of structured questionnaire. A multi stage sampling technique was employed for the study. In stage one (1) simple random technique was used to select four communities from each LGAs and a total of eight (8) communities were selected. In stage two, two (2) villages were randomly selected from each of the eight (8) communities to give a total of sixteen (16) villages. Finally, five (5) small ruminant farmers were purposively selected based on production activities from the sixteen (16) villages, making a total of eighty (80) respondents. Objectives i, ii and were realized using descriptive statistics; objectives iii and iv were analyzed using gross margin and multiple regression models respectively. The model as adopted from Onyebinama, (2004) is stated thus:

$$GM = GI - TVC \dots (1)$$

where

GM -Gross margin

GI - Gross income

TVC - Total variable cost,

The implicit form of the regression model is specified thus:

$$y = f(x_1, x_2, x_3, x_4, x_5, x_6, x_7) \dots (2)$$

$$Y = \text{output in naira}$$

where

X_1 - Age (years)

X_2 - Household size (farmers)

X_3 - Income (naira)

X_4 - Gender (male -1 and female - 0)

X_5 - Rearing experience (years)

X_6 - Years of education

X_7 - Marital status

X_8 - Labour cost (naira)

RESULTS AND DISCUSSIONS

Socio Economic Characteristics of Small Ruminant Farmers in Ohafia Agricultural Zone of Abia State, Nigeria

Socio-economic characteristics of respondents are presented in Table 1. The socio-economic characteristics of the small ruminant farmers showed that farmers had a mean age of 39 years. This implies that the farmers were in their active age. About 57.5% of the respondents were men. This implies that more men were involved in small ruminant farming. This study is similar to findings of Faizal and Kwasi (2014) reported that more male farmers compared with female counterparts were principal producers of sheep and goat animals accounting for (87.8%). Results also showed that 98% of the respondents had one form of education or the other implying that they can appreciate and embrace new technologies. The study also shows that the respondents had a relative small household size with a mean value of 6 persons. The study corroborates the findings of Fakoya and Oloruntoba (2009) who had a mean household size of six (6) persons. Majority of the respondents had a monthly income below ₦50,000 implying they are low income earners hence cannot engage in large scale small ruminant production.

Management Practice Used by Farmers in Ohafia Agricultural Zone in Abia State Nigeria

The management practice used by the small ruminant farmers in the study area is presented in Table 2. The dominant management system practiced by small ruminant farmers in the study area was permanent confinement.

The study shows that 44% of the farmers practiced permanent confinement. Furthermore, 41.25% of the farmers practiced partial confinement or tethering and 15% of the sampled respondents used the free rang management system

where the animals are allowed to roam about and feed themselves. This is so because the management system was barned in the farming season in most communities due to the destructive nature of sheep and goat on people crops. However, the dominant system is labour intensive since labour is required to cut and carry folder for the animals as well as tethering the animals which required bringing and taking the animal to and fro from point of feeding each time of grazing. The findings is similar to the findings of Aphunu *et al.* (2011) who reported that cut and carry system was a dominant management system practiced among small ruminant producers in their study areas.

Cost and Returns Estimate of Small Ruminant Production in Bende and Ohafia LGAs of Abia State, Nigeria

Cost and returns estimate of small ruminant production in Bende and Ohafia LGAs of Abia State, is presented in Table 3. The data show that the estimated costs and return of sheep and goat enterprise in the study area were ₦114, 000.00 and ₦180, 000.00 yearly respectively. Cost of foundation stock accounted for (39%) of the total cost while revenue from weaned kids had the highest share (60%) of total revenue. The total revenue on the average was ₦180, 000 while the gross margin and net income were ₦77, 500 and ₦66, 000 respectively. The findings is in agreement with that of Kumar and Roy (2013) who obtained a gross margin of Rs 66,443 and net return of Rs 65,478 of Indian currency which implies that small ruminant enterprise was profitable in their study area. The profit margin percentage was 36.7% while the ratio of net returns to total expenses (return per Naira invested) was 0.58. This implies that every ₦1 invested returned 58 kobo to the enterprise. The operating cost ratio of 56.9% indicates that 56.9% of gross revenue covered operating expenses, which accounted for about 90% of the total costs. A benefit cost ratio of 1.58 was obtained which is a further indicative of the profitability of sheep and goat enterprises in Bende and Ohafia LGAs of Abia State.

Socio-economic Factors that Influence Small Ruminant Production in Bende and Ohafia L.G.As, Abia State, Nigeria

The socio economic factors that influenced small ruminant production in the study area are presented in Table 4. The result in Table 4 shows that six out of eight variables fitted in the regression model was significant at various levels. Double log functional form was chosen as the lead equation based on conformity with a *priori* expectation of signs and magnitude of coefficients. The F- statistics was significant at 5% level of significance indicating goodness of fit. The coefficient of multiple determination (R²) value was estimated to be 0.78 this implies that 78% of total variation in the output

of small ruminant production was accounted for by the independent variables that were fitted into the model. The regression result shows that variables like age (X_1), household size(X_2), income (X_3), sex(X_4), rearing experience (X_5) and labour (X_8) were significant. The coefficient of age was statistically significant at 1% level of significance but inversely related to small ruminant output. This implies that as the age of the farmers increases the output from small ruminant production decreases all things being equal. This means that age of farmers is of concern as older farmers are less likely to adopt new technologies; also the enterprises become more labourious for them hence there will be reduction in the output of small ruminant animals.

Table 1: Socio economic characteristic of small ruminant production in the study area

Items	Frequency	Percentage
Age		
<20	2	2.5
21-30	10	12.5
31-40	27	33.75
41-50	34	42.5
>50	7	8.70
Mean	39.0	
Sex		
Male	46	57.5
Female	34	42.5
Marital status		
Single	55	68.75
Widowed	20	25.00
Divorced	5	6.25
Household size		
1-5	40	50.00
6-10	35	43.75
>10	5	6.25
Mean	6	
Years of education		
No formal education	1	1.2
Primary	10	12.5
Secondary	40	50
Tertiary	29	36.3
Level of income		
< 50,000	38	47.5
50,000-100,000	25	31.3
>100,000	17	21.2
Total	80	100

Source, field survey;2015

Table 2: Management systems practiced by farmers in the study area is presented in

Management system	Frequency	Percentage
Permanent confinement	35	43.75
Partial confinement (semi – intensive)	33	41.25
Free rage (extensive)	12	15.0
Total	80	100

Source: Field survey 2015

Table 3: Cost and returns estimate of small ruminant animals production in Bende and Ohafia LGA of Abia State

Item	Average cost (₦)	No of stock owned	Amount (₦)	Percentage
A: Fixed Costs				
Depreciation on house	2000	2	4,000	100
B: Variable Costs				
Foundation cost	4000	10 weaned	40,000.00	39.0
Labour (family /and hired)	1,500.00	15 man-days	22,500.00	22.0
Medication	500	10	5000.00	5.0
Veterinary services	500	10	5,000.00	5.0
Feeds			30,000.00	100
C: Total variable cost			102,500.00	100
D: Total Cost			114,000.00	
E: Returns/Revenue				
Weaned kids and rams	4,000	27	108,000	60.0
Culled doe and ewe	8,000	9	72,000	40.0
F: Total Revenue			180,000	
G: Net Farm Income (F-D)			66,000	
GM = TR-TVC (F-C)			77,500	
Profit margin % (G/F)				36.7
Operating cost Expenditure ratio (C/F)				56.9
Return/naira outlay (G/D)				57.9
Benefit /Cost Ratio (F/D)				1.58

Source: Field survey 2015

This finding is contrary to that of Fakoya and Oloruntoba (2009) who reported that age of farmers had positive relationship with the output of small ruminant production. Similarly the coefficient of household size was significant but negatively related to output of small ruminants. This implies that increases in household size by one person, decreases the output of small ruminant by 0.03 unit. It could be said that individuals in these household act as a drain on household resources instead of source of labour supply. The coefficient of income and rearing experience were positively signed and statistically significant at 5% and 1% levels respectively. This implies that as the income from other sources of small ruminant farmers and their rearing experience increase the output of small ruminants also increase. Meaning that a unit increase in farmer income from other sources leads to 0.05unit increase in the output of small ruminant animals, all things being equal. This agrees with the findings of Fakoya and Oloruntoba (2009) who reported that income and rearing experience had positive relationship with the output of small ruminant animal production. More so, the coefficient of sex was positively signed and significant at 5% level of probability. This shows that men dominated small ruminant production in the study area. The study agrees with the findings of Melissa *et al.* (2016) who opined that more men were involved /engaged in small ruminant production in the study area the coefficient of labour was highly significant at 1% level and had a positive relationship with small ruminant production. This implies that all things being equal, as labour input increases, output of small ruminant animal increases. This agrees with *apriori* expectation that, the more labour input put in, in an enterprise in term of care the higher the output from the enterprise especially at the rational stage of production.

Constraints that Militate against Small Ruminant Production in the Study Area

The constraints as identified by small ruminant farmers in the study area are presented in Table 5. From the study, the respondents identified inadequate fund availability to farmers as a major constraint. Also feeding and disease incidence were other serious constraints they identified. Other constraints in decreasing magnitude of importance included veterinary services, recommended strains of animals, lack of extension visit and pilfering. These agree with the findings of Aphunu *et al.* (2011) who reported that the respondents identified inadequate fund as their major constraints that militated against small ruminant production the study area.

Table 4: Regression estimate of the determinants of small ruminant production in the studyarea

Parameter	Linear	Semi-log	Double log+	Exponential
Constant	1786.21 (65.25)	9.583 (0.338)	11.508 (9.625)	12.840 (9.023)
Age	17.94 (3.17)***	46.06 (1.40)	-0.23 (-1.31)***	0.64 (0.002)*
Household	-26.08 (2.29)**	40.08 (1.54)*	-0.03 (-1.40)*	2.01 (1.33)
Income	29.9 (0.29)**	37.91 (1.09)	0.05 (2.64)**	12.12 (11.21)
Gender	67.02 (4.50)**	48.60 (2.13)	0.57 (-3.41)**	0.66 (0.41)*
Rearing experience	99.30	13.34	0.03	0.45
Educational level	34.24	0.20	0.024	4.64
Marital status	0.26 (0.15)*	1.06 (0.55)	1.23 (1.02)	13.14 (0.12)
Labour	-0.123 (1.08)	0.0009 (0.402)	0.44 (2.68)***	-504.11 (-0.24)
R ²	0.76	0.67	0.78	0.71
F-Stat	14.11**	13.41**	14.88**	12.61**

Source: Field survey data, 2015: values in parentheses are t values, *, **, *** are 10 %, 5% and 1% respectively

Table 5: Constraints to small ruminant production in the study area

Constraints	Frequency	Percentage
Insufficient fund	47	58.8
Diseases	46	57.5
Feeding	46	57.5
Veterinary services	32	40.0
Lack of recommended strain of animals	23	28.7
Lack of extension visit	22	27.5
Pilfering	15	18.8
Total	184	230

Source: Field survey, 2015. Multiple responses were taken hence total is more than sample size

CONCLUSION

Sheep and goats are important domestic animals representing valuable resources in tropical livestock production system. The value of ownership of these animals is reflected in several advantages which include income, food security, employment, fertilizer, social values, wealth creation. Factors such as income, rearing experience and sex had positive relationship with the sheep and goat production while age and household size were negatively signed. The production system is labour intensive, which could hinder the quantity reared by farmers in a typical subsistent farming system. The production of small ruminant animals was profitable and more men were involved. Furthermore the respondents identified insufficient fund as the most important constraint that militated against the business.

RECOMMENDATIONS

Based on the findings of the study the following were recommended, that loan facilities be made available to provide adequate inputs. Farmers should be encouraged to form cooperative societies that could help them to mobilize saving and increase their access to finance. Young people should also be encouraged in to the business.

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