

ECONOMICS OF RURAL LIVELIHOODS: A CASE STUDY OF SNAIL FARMING IN ITU LOCAL GOVERNMENT AREA, AKWA IBOM STATE, NIGERIA

Obinaju, L. C. and Asa, U. A.

Department of Agricultural Economics and Extension,
University of Uyo
Uyo, Akwa Ibom State, Nigeria.
E-mail: lawrence_obinaju@yahoo.com

Abstract

The study examined the economics of a rural livelihood –snail farming – in Itu Local Government Area of Akwa Ibom State, Nigeria. Data for the study were obtained from all the thirty registered snail farmers of Akwa Ibom State Agricultural Development Programme (AKADEP) in the study area. The data were analysed using descriptive statistics and costs-returns analysis. Results show that 63.3% of the respondents were males and 73.3% were married. The average age of the respondents was 39 years and their average years of snail farming experience was five. The costs-returns analysis revealed that snail farming is a profitable venture in the study area. Findings also reveal that high cost of land and high mortality rate of snail hatchings were the most severe constraints to snail farming in the study area. It is therefore recommended among others that snail farmers form cooperative societies to enable them access necessary credit facilities that will enhance their ability to acquire land for snail production since high cost of land is a most severe constraint to snail farming faced by the respondents.

Keywords: Economics, Rural livelihoods, snail farming, Itu Local Government Area

{**Citation:** Obinaju, L. C.; Asa, U. A. Economics of rural livelihoods: a case study of snail farming in Itu local government area, Akwa Ibom State, Nigeria. American Journal of Research Communication, 2016, 4(2): 75-85} www.usa-journals.com, ISSN: 2325-4076.

Introduction

Snails are bilaterally symmetrical invertebrates with soft segmented exoskeleton in the form of calcareous shells (Agbogidi and Okonta, 2011). They belong to the phylum mollusca, and

have a singular spiral shell into which the whole body can be withdrawn. Many species of edible land snails are recognized but the popular species of economic interest in Nigeria is the West African giant snail (*Archachatina marginata*). Snail meat has traditionally been a major ingredient in the diet of people living in high forest zone. *Baba and Adeleke (2006) and Okpeze et al (2007)* reported that snails have good quality protein and are rich in potassium, phosphorus, essential amino acid and vitamins B and C. The low cholesterol level of snails makes them useful in the treatment of arteriosclerosis and other heart-related diseases (Afolabi, 2013). Other curable ailments by snails include whooping cough, anemia, ulcer, asthma, age problems, hypertension and rheumatism (Abere and Lameed, 2008). Snail slurries are useful industrially for zymolyze enzyme production (Solomon, 2013). In addition to the nutritional value of snail meat, recent studies indicate that the glandular substances from edible snails cause agglutination of certain barrier which could be of value against a variety of ailments including whooping cough (Efarmspro, 2006). The high protein content of snail meat is considered important in the treatment of anaemia and in the past, according to *Omok et al., (1999)*, the meat was recommended as a means of combating ulcers and asthma. Snails have also been found to have aesthetic values – they are often utilized for a lot of decorative works and carvings such as flower vases, ash trays and other interior decoration. (Baba and Adeleke, 2006). However, the Federal Ministry of Economic Development and Reconstruction (2000) reported that the meat supply situation in Nigeria remains critical in spite of the relatively large animal population of over 13 million cattle, about 1.7 million domestic rabbit, 34 million pigs, 104 million local poultry, and about 20 million exotic poultry.

The contributions made by domestic animals to the protein need of the nation has been insufficient, and the red meat laced with high cholesterol, from conventional sources of animal

protein in the nation, has unfortunately been identified as the major cause of cardio-vascular diseases especially among the aged (Onwuka, 2009); hence the need to look at some unconventional sources of protein to meet the animal protein need of the nation (Etuhu *et al.*, 2008). Snails according to Afolabi (2013), could serve as a ready meat for a vast majority of the populace in the tropics.

Snail farming has recently attracted attention among farmers in Nigeria as an aftermath of the alarm raised by the food and Agriculture Organization (FAO) on animal protein deficiency among Nigerians (Adesope, 2000; Akinnusi, 2000). Snail meat is high in protein (37 - 51%) as compared to that of guinea pig (20.3%), poultry (18.3%), fish (18%), cattle (17.5%), sheep (16.4%) and swine (14.5%). Studies have shown that snail meat contains iron (45 – 59mg/kg), relatively low fat content (0.05 - 0.08%) and also contains all the amino acids needed for human health (www.fao.org >docrep, 2015). Asa (2006) reported that snail farming is a rural livelihood in Akwa Ibom State. A proper analysis of the level of profitability of snail farming is pertinent. Hence, this study seeks to determine how profitable snail farming is in the study area and ascertain the constraints to snail farming faced by the respondents.

Methodology

The study was conducted in Itu Local Government Area of Akwa Ibom State, Nigeria. The local government area lies within latitude 6⁰40” North and longitude 9⁰30” and 5⁰47” East; occupies a total land area of 606, 099km²; and has an estimated population of 127,856 (National Population Commission, 2006). Data for the study were obtained from primary sources through the use of questionnaires. The population of the study included all AKADEP – registered snail

farmers (30) in Itu Local Government Area. Frequency counts and percentages were used to analyze the socio-economic characteristics of snail farmers in the study area. Costs-returns analysis was used to ascertain the profitability of snail farming. The equation used in ascertaining the net farm income is as follows:

$$\text{NFI} = \text{TR} - (\text{TFC} + \text{TVC}) \quad \text{Equation (i)}$$

The Profitability ratios are as follows:

$$\text{Return on Sales (ROS)} = \text{NFI} / \text{TR} \quad \text{Equation (ii)}$$

$$\text{Rate of Return on Investment (RRI)} = \text{NFI} / \text{TC} \times 100 \quad \text{Equation (iii)}$$

$$\text{Rate of Return on Variable Cost (RRVC)} = (\text{TR} - \text{TC}) / \text{TVC} \times 100 \quad \text{Equation (iv)}$$

Where:

NFI = Net farm income

TR = Total revenue

TFC = Total fixed cost

TVC = Total variable cost

TC = Total Cost

The constraints to snail farming was ascertained using a 3 – Point Likert type scale of: Not a constraint, Minor constraint and major constraint assigned nominal values of 9, 1 and 2 respectively. The man value for each constraint item was obtained by summing up the ratings 0, 1 and 2 and dividing the sum by the number of ratings. Based on the mean values, the constraints were rated from most severe to least severe.

Results and Discussion

Socio-economic characteristics of snail farmers in Itu Local Government Area: the result in table 1 shows that 63.3% of the respondents were males while 36.7% were females. This reveals that snail farming in the study area was dominated by males. The findings corroborate Raheem (2001) who reported that majority of snail farmers in Oyo State, Nigeria are males. The average years of the respondents was 39 years and their average years of snail farming experience was five. Table 1 also reveals that majority of the respondents (66.7%) were not members of cooperative societies in the study area.

Profitability of snail farming in Itu Local Government Area: The costs-returns analysis as shown in Table 2 reveals that the fixed cost constitutes 83.84%, the total cost of production while variable cost constitutes 16.16%. The costs of land (31.90%), housing units (36.03%) and interest on capital borrowed (16.20%) constitute the major fixed cost incurred by the respondents while the major variable costs were: cost of feed (33.67%), cost of pesticide (18.32%) and the cost of procuring hatchings for breeding (17.73%). The table shows that the total cost of snail production for the production period of 2014 – 2015 (the period covered by this study) was ₦4,990,750.00, the revenue earned was ₦6,513,500.00 and the net farm income was ₦1,522,750.00. The average Return on Sale (ROS) was 0.23, indicating that out of every naira (₦) earned, about 23 kobo accrue to the snail farmer as net income. Also with an RRI of 30.51% the snail farmer therefore earns ₦30.50 profit on every naira spent in snail production. Rate of return on Variable Cost (RRVC) was estimated to be about 288.84% per production period. In other words, every one naira cost incurred on variable input generates about ₦288 naira. This reveals that snail farming is profitable in the study area. The result corroborates Lameed (2006) who reported that snail farming is a profitable business in Nigeria.

Table 1: Socio-economic Characteristics of Snail Farmers in Itu Local Government Area of Akwa Ibom State, Nigeria

| Socio-Economic Characteristics | Frequency | Percentage | Mean |
|---------------------------------------|------------------|-------------------|-------------|
| Sex | | | |
| Male | 19 | 63.3 | |
| Female | 11 | 36.7 | |
| Age | | | |
| 21 – 40 years | 20 | 66.7 | 39 |
| 41 – 60 years | 7 | 23.3 | |
| 61 – 80 years | 3 | 10.0 | |
| Marital status | | | |
| Single | 22 | 73.3 | |
| Married | 8 | 26.7 | |
| Educational status | | | |
| No formal education | 1 | 3.3 | |
| Primary education | 1 | 3.3 | |
| Secondary education | 10 | 33.3 | |
| Tertiary education | 14 | 46.7 | |
| Adult literary education | 4 | 13.3 | |
| Household size | | | |
| 1 – 3 person(s) | 7 | 23.3 | 5 |
| 4 – 6 persons | 21 | 70.0 | |
| 7 – 9 persons | 2 | 6.7 | |
| Years of experience in snail farming | | | |
| 1 – 5 year(s) | 22 | 73.3 | 5 |
| 6 – 10 years | 5 | 16.7 | |
| 11 – 15 years | 3 | 10.0 | |
| Membership of co-operative societies | | | |
| Yes | 10 | 33.3 | |
| No | 20 | 66.7 | |

Source: Field Survey Data, 2015

Table 2: Costs – Returns Analysis of Snail Farming in Itu Local Government Area

| Items | Total Cost of Production (₦) | Percentage |
|------------------------------------|---------------------------------|------------|
| A. Fixed Cost | | |
| Land (ha) | 1,335,000.00 | 31.90 |
| Hatchery | 477,500.000 | 11.41 |
| Basin/Baskets | 110,200.00 | 2.63 |
| Wheel Barrows | 76,700.00 | 1.83 |
| Interest on capital | 678,000.00 | 16.20 |
| Housing units | 1,507,000.00 | 36.01 |
| Total Fixed Cost (TFC) | 4,184,400.00 | 100 |
| B. Variable Cost | | |
| Labour (man days) | 72,300.00 | 8.97 |
| Transportation | 88,100.00 | 10.93 |
| Hatchings | 143,000.00 | 17.73 |
| Feed | 271,500.00 | 33.67 |
| Water | 83,750.00 | 10.39 |
| Pesticide/detergents | 147,700.00 | 18.32 |
| Total Variable Cost (TVC) | 806,350.00 | 100 |
| Total Cost (TC) = TFC + TVC | 4,990,750.00 | |
| C. Revenue | 6,513,500.00 | |
| D. Net Farm Income (NFI) | | |
| NFI = TR = (TFC + TVC) | 1,522,750.00 | |
| E. Profitability Ratios | | |
| Return on Sales | 0.2338 | |
| Rate of Return on Investment | 30.51 | |
| Rate of Return on Variable Cost | 288.84 | |

Note: One US dollar = 199.05 Nigerian Naira (N) as at December 5, 2015

Source: Field Survey Data, 2015

Constraints to snail farming in the study area: Data in Table 3 shows that the most severe constraints to snail farming faced by the respondents were: high cost of land ($X = 1.20$), high mortality rate of snail-hatchlings ($X = 1.20$) and attacks by predators. The result-corroborates Peter (2015) who reported that high cost of land was the major constraint to snail farming in Uyo Local Government Area of Akwa Ibom State, Nigeria. The least severe constraint to snail farming faced by the respondents was “inability to sell produce quickly” ($X = 0.63$). This is due to the fact that consumption of snail in the study area is not hindered by any socio-cultural factor.

Table 3: Constraints to Snail Farming in Itu Local Government Area

| SN | CONSTRAINTS | MEAN | RANK |
|----|-----------------------------------|------|------|
| 1. | Time Consuming | 1.03 | 5 |
| 2. | High cost of waste used as feed | 1.10 | 4 |
| 3. | High cost of Land | 1.20 | 1.5 |
| 4. | High mortality rate of hatchlings | 1.20 | 1.5 |
| 5. | Attacks by Predators | 1.13 | 3 |
| 6. | Inability to sell produce quickly | 0.63 | 6 |

Note: * = ranks 1.5 are considered the most severe constraint while rank 6 is the least severe constraint

Source: Field Survey Data, 2015

Conclusion and Recommendation

The study revealed that snail farming is a profitable rural livelihood in the study area, and that the most severe constraints to snail farming in the study area were high cost of land and high mortality rate of snail hatchings. It is recommended that snail farmers in the study area form co-operative societies that will enable them access adequate credit facilities from financial institutions. This will enhance their ability to acquire sufficient land for snail production in the study area since high cost of land was a most severe constraint to snail farming faced by the respondents. The States Ministry of Agriculture and Rural Development, through its extension agents, should endeavour to enlighten/educate snail farmers on appropriate ways to handle snail hatchings since high mortality of snail hatchings was also a most severe constraint to snail farming faced by the respondents.

References

- Abere, S. A. and Lameed, G. A. (2008). The medical utilization of snails in some selected states in Nigeria (In) Onyekwelu, J.C., Adekunle, U. A. J. and Oke, D. O. (eds) *Proceedings of the First National Conference of Forest and Forest Products Society (FFPs) held in Akure, Ondo State between 11th and 18th April, 2008. pp 233 – 237.*
- Adesope, O. M. (2000). Attitude of Households in Niger Delta Zone towards snail meat consumption (In) Ukachukwu, S. N. et al (eds). *Animal Production in the New Millennium: Challenges and Options.* Zaria: NSAP Secretariat.
- Afolabi, J. A. (2013). Snail farming as an environment friendly and viable enterprise in Ondo State, Nigeria, *Journal of Human Ecology*, 42(3): 289 – 293.
- Agbogidi, M. O. and Okonta, B. C. (2011) Reducing poverty through snail farming in Nigeria, *Agriculture and Biology Journal of North America*, 2(1): 169 – 172.

- Akinnusi, O. (2000) Snail rearing: Case Study of Abeokuta, Ogun State, Nigeria. Proceedings of 5th Annual Conference of Animal Science Association of Nigeria, Port Harcourt, Nigeria. September, 19 – 22.
- Asa, U. A. (2006) Perceived effect of Akwa Rubber Estates Limited (AKRUBEL) on rural livelihoods in Akwa Ibom State, *Nigerian Journal of Agriculture, Food and Environment*, 3(1&2): 52 – 55.
- Baba, K. M. and Adeleke, M. T. (2006), Profitability of Snail Production in Osun State, Nigeria, *Journal of Agriculture and Food Sciences*, 4(20): 147 – 155.
- Efarmspro (2006) Snail Farming and Management. Accessed via www.efarmspro.com on May 29, 2014.
- Etuhu, K., Mafeni, M. and Ngenwi, A. (2008) Comparative Performance of three edible snail species using intensive cage housing system in Cameroon, *Bulletin on Animal Health Production in Africa*, 56: 345 – 332.
- Federal Ministry of Economic Development and Reconstruction (2000) Third National Development Plan (1975 – 1980).
- Lamed, G. A. (2006) Socio-economic characteristics of snail farmers, consumers and sellers in selected zones of State Agricultural Development Programmes, *Journal of Agriculture, Forestry and Social Sciences*, 4(2): 68 – 78.
- National Population Commission (2006) Population and Housing Census of the Federal Republic of Nigeria. Analytical Report at the National Population Commission, Abuja, Nigeria.
- Okpeze, C. N., Omole, A. J., Ajayi, F. T. and Adebowale, E. A. (2007) Effects of feeding adult snails *Stylosanths guinaesis* or *Lablab purpureus* as substitute for paw paw leaf, *African Journal of Biotechnology*, 6 : 1959 – 1962.
- Omok, A. J., Oluokun, J. A., Tihamiyu, A. K., Afelabi, A. O., Adetor, F. O. and Adejuyibe, A. P. (1999). Snail Production potential for increasing animal protein intake in West Africa. *Proceedings of the 26th Annual Conference of the Nigerian Society of Animal Production held in Ilorin, Nigeria between 21st and 25th March, 1999. pp. 393 – 401.*
- Onwuka, R. A. (2009). Waist hip ratio as a risk factor of cardiovascular disease among patients in the Medical Outpatient (MOP) cardiac clinic, University College Hospital (UCH), Ibadan, Oyo State. B.Sc Project, Department of Human Nutrition, University of Ibadan, Nigeria. pp. 26 – 28.
- Peter, I. B. (2015) Economics of Snail Production in Uyo Local Government Areas, B. Agric, Department of Agricultural Economics and Extension, University of Uyo, Uyo 53pp.
- Raheem, A. A. (2001) Economic analysis of snail production in Nigeria: A case study of Ogbomoso North and South Local Government Areas in Oyo State Nigeria. PGD Dissertation, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria. pp. 16 – 19.

Solomon, L. (2013) Special Feasibility study report on snail farming in Bori, Rivers State, Nigeria, *American Journal of Research Communication*, 1(4): 138 – 164.

www.fao.org>docrep (2015) The State of Food and Agriculture 2005. Accessed on December 5, 2015.