ECONOMICS OF SNAIL PRODUCTION AMONG FARMERS IN ONICHA LOCAL GOVERNMENT AREA OF EBONYI STATE, NIGERIA.

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Abstract
Economics of snail production among farmers in Onicha Local Government Area of Ebonyi State, Nigeria was Studied A total of one hundred respondents were randomly selected and used for the study. A well-structured questionnaire and secondary were used to solicit information from respondents. Percentage response and frequency distribution were used to capture objectives I and iv. The objectives ii and iii were addressed using regression analysis and gross margin analysis respectively. The result revealed that determinants to farmers' output were age of the farmer and educational level. Snail production is profitable in the study area. The major limitations to snail production were inadequate credit, slow growth of snail and high mortality. It is imperative to enact policies and programmes that would enhance farmers' access to educational programmes and credit through microfinance bank and commercial banks

Keywords: Economics, snail, production, farmer

Introduction

Snail, a hermaphrodite and nocturnal mini livestock of gastropoda class and belong to the *Phylum Mollusca (* a classification of invertebrate animals with soft unsegemented body and which is often covered with carcareous shell) (Amusa, 1989). Many species of edible land snails are recognized in Nigeria but the popular species of economic interest is the West Africa giant snails; *Archatina achatina* and *Archachatina marginata(FAO,2003)*. Its meat regularly known as "Congo meat" is socially well accepted in many parts of tropical rainforest belt where it obliges as complementary delicacy to high cost conventional animal protein is highly nutritious. Snail is rich in protein (12.16%) and iron (45-50mg/kg), low in fat and contains almost all the amino acid needed by the humans and hence serves many medicinal benefits (Baba and Adeleke , (2006). It is a good antidote for vascular diseases (such as heart attack, cardiac arrest, Hypertension, stroke, high blood pressure another fat related ailments), treatment of iron – deficiency anaemia, cure kidney disease; improve constipation and hemorrhoids; prevent influenza; restore vitality and virility; perpetuate beauty and clears the skin (Agbogidi, *et al* (2008)), has curative competence for whooping cough, ulcer, athsma and age problems.(FAO, 2003). Other qualities of this mini livestock include:: can be cheaply maintained in terms of housing, feeding, and health care, highly adaptable to a variety of conditions (villages, farms backyard, shed, cities etc), reproduce rapidly and efficient producers of meat(FAO, 2003).

In contemporary time, this essential delicacy is scarce and luxurious to be chunk of menu of most of the poor resource households. This is because the bunk of this mini livestock is scouted from the wild and this snail habitant is increasingly being vulnerable to innumerable human endeavors (indiscriminate hunting of snails before they reach maturity, bush burning, use of agro chemicals and deforestation) (Baba and Adeleke , (2006)). Furthermore, the scarcity of snail is compounded by cultural limits, climatic problem, relatively slow growing animals, agricultural pests, lack of industrial formulated feed and socioeconomic problem (Cobbinah, *et al*, (2008). It is in view to address these problems that the broad objective of this study is focused on. The broad objective of the study is economics of snail production in Onicha L.G.A of Ebonyi State Nigeria. Specifically, the objectives are to: describe the farmers' socio economic characteristics, determine the effect of the farmers' socio economic characteristics on their output, estimate the profitability of snail farming in the area and identify constraint to snail production in the study area.

Materials and Methods

Onicha local Government Area of Ebonyi State is the study area and is located between latitude 6^0 15 and 7^0 27^0N of the equator and longitude 8^0 17 and 12^0 38'E of the Greenwich Meridian. It has land area of 476km^2, population of 236,828 people (NPC, 2006), annual rainfall between 1250mm-1350mm, atmospheric temperature ranges from 26^0C – 30^0C and relative humidity of 70%. .Multi stage randomly sampling techniques was used to select one hundred (100) farmers from twenty villages (20) out of twenty eight in the study area. The information to be used in this study was derived from primary and secondary sources.

Percentage response was used to analyze the data and draw conclusion on objectives i, and iv. Objectives ii and iii were analysed using multiple regression analysis and gross margin analysis respectively. The regression model is represented as thus YI=a + b1x1 + b2x2 + b3x3 + b4x4+....+bnxn.....(1)

Y= snail output (kg), X1= age of the farmers (years) X2= level of formal educations (years), X3= house hold size(yrs), X4= credit access(N), X5= extension contact(NO), X6= farming experience(yrs), ei= stochastic error, bi-b8 =regression coefficient, a= constant ter

. Four functional forms (linear, semi-log and Cobb-Douglas) of production function were tried and explicitly represented as

Linear function: $Y = b_0 + b_1 x_1 b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + ei$ .....(2)

(Double log function (Cobb Douglas): $\ln(y) = \ln b_0 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + ei$ (3)

Semi double log function: $Y = \ln b_0 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + ei$ ..... (4)

Exponential function: $\ln Y = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + ei$ ..... (5)

Y = rice yield (kg), X_1 = farm size (ha), X_2 = seed (kg), X_3 = fertilizer (kg),

X_4 = labour (manday), μ = error term, A_0 = constant, $\beta_1 - \beta_4$ = coefficient estimates with respect to the input used. The choice of the best functional form was based on the magnitude of the R^2 value, the high number of significance, size and signs of the regression coefficients as they conform to *apriori expectation*. Budgetary techniques were used to determine the gross margin and net farm income obtained from snail production in the study. Gross margin (GM) analysis, which is the difference between the total revenue (TR) and the total variable cost (TVC) can be put as: G.M. = TR – TVC ... (6)

The net farm income can be calculated by gross margin less fixed input.....(7)

Results and Discussion

Table I indicated that 70% of the respondents were above 50 years, while the least, (2%) were less than 30 years. The domination of old aged people in the study could be owing to the fact that snailery, offers them sufficient time to engage in supplementary ventures (FAO 2003). Majority (78%) of the respondents had formal education, while only 22% had no-formal education. Education helps to familiarize one with information especially as regard to the nutritive value of the mini-livestock and hence boosting its' consumption. Table 1 further revealed that 70% of the respondents had household size below 11 persons, while 30%; had above 11 persons. Large household size according to Agbogidi, *et al.* (2008) implies more access to labour, especially where they are of labour age and as well available. Majority (98%) of the respondent had rearing experience of less than 10 years, while 2% had above 10 years. The number of farming experience helps farmers to set realistic goals (Nwaru 2006). The coefficient of age of the respondents was positive, which is contrary to a prior expectation that production decline with advancing in age and significant at 1% alpha level. The behavior of the variable could be associated to the fact that snailery is less labour intensive and hence, age cannot be a barrier to its production. In line with *aprioiri* expectation, the coefficient of education had positive effect on the output of snail farmers and was significant at 1% alpha level. Educated people as reported by Nwaru (2006) are better adoptive individual for high productivity.

Table3 of gross margin and net farm Income analyses of Snail production show that snail farmers made profits from their production with gross margin of N21, 178 and Net farm income of N 18,778 per farming season. This shows that snail production in the study area is a profitable business. The data in Table 4 shows that BCR is greater than one. Judging from investment decision criteria, this implies that snail farming is profitable. The gross revenue ratio was found to be 0.388, which implies that from every N1.00 returns to the snail industry, 38.8k is spent. The expense structure ratio was found to be 0.11005, which also implies that 11.0% of the total cost of production is made up of fixed cost component, thus making the business worthwhile to invest in. Also, the rate of returns was found to be 2.556 which shows that for every one naira invested in snail production 255k is gained. From all these profitability ratios snail production is a profitability business in the study area. Poor access to credit was complained by 80% of the respondent as reported in table 5. The poor access to credit as reported by Agbogidi, *et al.* (2008) could be as result of high interest rate charged by leading institutions as well as short repayment of loan. Also, 70% of the sampled farmers incurred the problems of snail as pests. Snail as pest is generally destructive to crops and vegetables, carrier of bilharzias and Schistosoma diseases and host of liverflukes (Cobbinah, *et al*, 2008).The other problems were slow rate of growth (50%)

and high mortality (50%).

Conclusion and Recommendation

Based on the major findings of this research, the following conclusions were drawn. The determinants to farmers' output were age of the farmer and educational level. Snail production is profitable in the study area and the major limitations to snail production were inadequate credit, slow growth of snail and high mortality. Based on the result of the study, the following recommendations were proffered; (i) there is need to strengthen the current policies on education such as universal basic education, adult and normadic education; (ii) education of farmers should be enhanced through aggressive awareness campaign, seminar and workshop; (iii) credits should be made available to the farmers through microfinance banks, commercial banks and any other government leading agencies at reduced interest rate and affordable collateral; (iv) as majority of the famers are old people, there is need to encourage this age class through provision of improved production inputs at subsidized rate.

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Table I. DistributionofRespondentAccordingtoSocioeconomicscharacteristics

Variable	Frequency	Percentage%
Age		
Less than 30	2	2
30-40	8	8
41-50	20	20
51-60	33	33
61-74	27	37
Education		
Non-formal education	22	22
Primary education	18	18
Secondary education	22	22
Tertiary education	38	38
Household size		
1-5	20	20
6-10	50	50
11-15	30	30
Rearing experience		
1-5	54	54
6-10	44	44
11-15	2	2

Table 2 Multiple Regression Results.

Variable	Linear	Exponential	Double log^{+}	Semi-log
Intercept	8.538	10.171	2398.975	-516.377
	(9.413)**	(9.074)***	(7.389)***	(-8.063)***
Age	-2.062	-1.222	-0.324	931.726
	(-2.507)**	(-3.117)***	(-2.455)**	(0.801)**
Farm. Exp.	0.300	0.298	0.281	273.979
	(0.830)	(1.919)	(-2.464)	(2.720)
H Hsize	-0.342	-0.012	-1.270	-1416.897
	(-0.867)	(-0.513)	(-1.882)	(-1.061)
Edu.	0.620	0.039	0.498	1033.797
	(1.010)	(1.165)	(3.712)***	(6.646)**
R^2	0.5021	0.409	0.784	0.468
F-value	(2.653)**	(2.364)**	(4.172)***	(7.096)**

Source: Field Survey (2013)

*,** and*** significant at 10%, 5% and 1% respectively, figures in parentheses are the t-ratio.

Table3. Gross Margin and Net Farm Income Analysis for One Farming Season

Items	Cost (N)
Total Revenue	32,550
Variable cost	
Hatchling cost	10,720
Feed cost	400
Water cost	82
Transport	120
Total Variable cost	11322
Gross margin	21178
Fixed cost	
Land	1000
Cost of equipment	400
Total fixed cost	1400
Net farm Income	18,778

Source: Field survey (2014)

Table 4: Profitability Ratio of the Snail

Ratios	Value
Benefit Cost Ratio TR/T	2.574
Gross Revenue Ratio TC/TC	0.388
Expense Structure Ratio FC/TC	0.11005
Rate of Returns NR/TC	2.556

Source: Field survey (2013)

Table 5: Distribution of Respondents According to Constraints to Snail production

Variable	Frequency	Percentage
Poor access to credit	80	80
Slow rate of growth	70	70
Pest problem	60	60
High mortality	50	50
Problem of theft	30	30

Multiple responses

Source: Field Survey (2013)