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ECONOMIC IMLICATIONS OF SNAIL PRODUCTION IN ENNGU STATE

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Abstract: The main purpose of the study was to determine the economic implication of snail production in Enugu State. The study was guided by three research questions and three null hypotheses. A descriptive survey research design was adopted for the study. The population for the study was 85 comprised of 33 extension agents and 52 registered snail farmers in Enugu State (source; Department of Animal production, Ministry of Agriculture Enugu State). The instrument used for data collection was a 23-item questionnaire grouped into three sections. The instrument was validated, and reliability of the instrument was determined using Cronbach Alpha which yielded 0.76 Out of 85 copies of the questionnaire distributed 78 were properly filled and returned representing 91.76% return rate. Mean, standard deviation and t-test statistics were the statistical tools used for data analysis, form the result of data analysis, the study identified the economic importance of snail production with respect to provision of snail meat for achieving food security, job creation and profitability to farmers in Enugu State. The findings of the study showed that there is no significant difference in the mean rating of extension agents and snail farmers on the identified economic implications. Based on the findings, recommendations were made which include; that more people (especially the young) should venture into snail production; while current snail farmers should enlarge their production for sustainable food security. Also, government should direct effort towards the promotion of snail farming a sit creates job for the people.

Keys words; *Economic implication, snail production and snail farming*

Introduction

in contemporary Nigeria society, there has been growing concern on healthy living, especially as it concerns the level of protein and vitamin intake from crops and animals produce in the nation. According to Ahmadu and Ojogho (2012) the daily per capital animal protein intake remains less than 10grams which is below the recommended minimum requirement of 35 grams (food and Agriculture Organization (FAO), 2011). For this to be corrected, there is need to invest and explore other sources of animal protein in addition to the conventional sources such as poultry and ruminants. Among other sources of animal protein farming and production that is creating jobs and increasing productivity, is snail farming.

Smail which is one of the non-timber forest products (NTFPS) has recently attracted attention among Farmers and young entrepreneurs in Nigeria as an aftermath of the island raised by FAO on animal protein deficiency among Nigerians. Smail a crawling ex-oskeleton invertebrate animal which belong to the group of animals called Molluscs (Akinnusi 2013). Obinah (2014) stated that snails are the largest group of Molluscs constituting the largest animal anthropoids.

Snail meat is socially well accepted in many parts of Enugu state and Nigeria at large. It is commonly known as "Congo meat" and it is one of the most loved delicacies. Many species of edible land snails are recognized but the popular species of economic interest is the west African giant snail and Archacatina, Marginata. Heliciculture (snail farming) is an excellent alternative to obtain snail instead of Wilde snail hunting and is relatively a new lucrative field of agricultural production Hatziioannou, Issari, Neofitou, Aifadi and matsiori (2014) opined that due to favourable climatic conditions and a great interest of mostly young people towards harnessing the opportunity in this field Heliciculture has developed within the last 8 years

Furthermore, protein content in snail meat is of good quality with high levels of lysinie, isoleucine and leucine. Uzor (2012) and Yahaya (2012) stressed that snail meat is rich in iron (45 to 50 mg per kg) and calcium nut low in fat (0.5 to 0.8%) and cholesterol. It also has all the amino acids needed for the human nutrition compared to other protein sources like poultry and pigs. The low cholesterol level of the meat has made it useful in the treatment of arterisoclerosis and other heart-related diseases (Ebenebe, 2012). Because of its medical values and nutritional content, the demand was made meat has increased over the years in both domestic and foreign markets. This ought to have implication to the economic and agricultural development of the Nation as youths and old farmers and creating job through it; and this also serve as a means of developing the Gross Domestic Products (GDP). Snail fits in well with other farming activities help me to fertilize the soil pirate to cultivation of crops

Snail production by household farmers is becoming popular due to the fact that people have realized the need to diversify the sources of income and reduce the risk in for dependent in only one source. Snail production is less resource consuming and if properly managed, could represent an alternative to the current livestock production system. Due to the size of snail, noiseless and easy to handle, they can be read in the Urban areas without infringing on the peace of the neighbours (Odunaiya 2011). Snail production may have implications on the economy through achieving sustainable food security, job creation and profitability for farmers.

On the economic implication of reproduction, studies have indicated that snails are useful in other applications including agriculture which enhances its economic values. An economic study of reproduction examines the effect of the farming activity on the economy in a specific area, ranging from a neighborhood to entire globe. Yahaya (2012) and Ojo and Zira (2017) hinted that it usually measure changes in snail meat production to food supply, business profits personal wages, and salary/jobs. The economic event considered in this case can include implementation and utilization of new or innovative snail farming techniques in achieving the desired output in snail production for economic growth

In achieving food security, snail meat, as earlier pointed out that as a meat for many people irrespective of socioeconomic status. The low fat content in snail meat make a good anitdote for fat related diseases such as hypertension, and zinc obtained from the meat is a valuable factor in the maintenance of healthy prostate gland (Ahmadu & Ojoho 2013). It therefore does not serve as meat for Animal protein on consumption as food, but also has other medicinal values.

Furthermore, snail production is lucrative and surprising as it provide employment opportunities for the unemployed you. Adebayor (212) observed that snail production has a significant impact on the enterpreneurship development as it engages productive youth in supply of snail and other snail by products to local and international demand. Through this, different levels of employment are created from farming, process, Marketing and distribution until it get to the final consumer. Ojo and Zira (2017) opined that milk production is profitable with numerous advantages

which include; it can be cheaply managed in terms of housing, feeding and Healthcare, it is highly adaptable to a Rises of condition (villages, Farm backyard, shed, tdtt); Reproduce rapidly; they are efficient producers of me and they have high medicinal value full stop this summer and face around 40 and it is cost-effective to handle and manage

In spite of this advantages and opportunities is snail production, there is still low production rates and poor involvement of youth in snail production in Enugu state. In Enugu State, snail still got that from the forest as the Snail farmer is still small. Snail Farmers population is small compared to the increasing demand of the Snail meat. Odunaiya (2011) pointed that the Farmer and the extension agent have a critical role to play in improving the production of snail meet. To achieve this, the fsarmers needs to be taught the innovative measure and improve snail varieties which they should adopt to improve the farm productivity. Teaching and enlightenment are usually done by the extension agent that ensure that such innovation get to the Farmers irrespective of the Farmers location. At the same time wild snail production is declining rapidly due to indiscriminate hunting of snail before they reach maturity, Bush burning, use of agro-chemicals, deforestation and change in weather condition (Efarmspro 2016). From the above there is a need to investigate the economic impact of snail farming as conscious effort needs to be directed to increase more snail production.

Statement Of Problem

Based on the assertions made by FAO (2011) on the level of animal protein intake, there is a need to bridge the gap using the animal protein provided by snail. This necessitate, they need to look inward and integrate snail farming as a lucrative and sustainable means of livelihood and job-creating for economic development to stop there is a need of snail mail and local and international market without a commensurate farmers productive capacity to meet the quantity and quality demanded. This study is aimed at justifying the economic implications of snail production with empirical data, in order to increase youth participation and sustainable meat production

The researcher is worried on the level of demand for snail meat and the number of a able Nigerian youth seeking for job. If snail production is lucrative and has positive economic implication on the development of Enugu State, more snail farmers should be engaged through Training and Empowerment. This forms the problem of this study that centres on the need to encourage the supply of snails meat with a accompanying profit. The problem of the study posed as question is; what are the economic implications of snail production in Enugu State

Purpose Of the Study

The central purpose of this study was to determine the economic implications of snail production in Enugu State, specifically the study sought to determine

1. the economic implications of snail production for sustainable food security in Enugu State
2. the economic implications of steel production for job creation in Enugu State
3. the economic implications of snail production for farmers profitability in Enugu State

Research Questions

The following research questions guided the study

1. What are the economic implications of smell production for sustainable food security in Enugu State?
2. What are the economic implications of production for job creation in Enugu State?
3. What are the economic implications of reproduction for farmers profitability in Enugu State?

Hypotheses

The following hypotheses did the study at 0.05 level of significance

H_o1: There is no difference on the mean rating of extension agent and snail farmers on the economic implications of reproduction for sustainable food security in Enugu State

H_o2: A significant difference does not exist on the mean rating of extension agent and snail farmers on economic implications of snail production for job creation in Enugu State

H_o3: There is no statistical differences on the meaning of extension agent and snail farmers on the economic implications of snail production for farmers profitability in Enugu State

Method

This study adopted a descriptive survey research design according to a Alio (2008) and Nworgu (2015) descriptive survey research design is one in which a group of people or items as studied by collecting and analysing data from only a few people or items considered to be representative of the entire group or the entire population if it is manageable. This design was considered necessary because of the wide distribution of the respondents and the registers snail farmers, and the polychotomously structured instrument used for data call

The area of the study was Enugu State of Nigeria. Enugu State is one the five states in South East Geopolitical Zones. The Population for the study was 85, comprising 33 extension agents and 52 registered snail farmers in Enugu State (Source department of animal production ministry of Agriculture in Enugu state) The number was manageable hence there was no sampling

A structured questionnaire containing 23 items was the instrument for data collection. The questionnaire was group into two parts. Part A contains the personal data of the respondent and Part B contained 23 items group into three sections according to the Research questions that guided the study the items in the instruments were structured in 4 four point rating scale of strongly agree, agree, disagree and strongly disagree with numerical values of 4 3 2 and 1 respectively.

The instrument was validated by three experts to from Agric education lecturers in the Department Of Technology And Vocational Education and one from measurement and evaluation in Department Of Computer And Mathematics Education all from Enugu State University of Science and Technology Enugu. The reliability of the instrument was dtermined by administering 20 copies of the questionnaire to 10 extension agent and 10 registers snail farmers in Ebonyi State. The data collected was analyzed using Cronbach Alphaa and reliability coefficient yielded 0.76. This is in line with our Uzoagulu (2011) who noted that ability question above 0.6 indicate the instrument is reliable

Out of 85 copies of the questionnaire distributed 78 (29 extension agent and 49 snail farmers were properly filled and returned representing 91.76% return rate. Data collected were analyzed using mean and standard deviation to answer their research question while t-test was used to test the null hypothesis at 0.05 level of significant using statistical package for social sciences(SPSS). Decisions were made using the real limits of number on four point scale such as follows:

strongly agree	-	3.5 - 4.0
Agree	-	2.5 - 3.49
Disagree	-	1.50 – 2.49
strongly disagree	-	1.00 – 1.49

The standard deviation was used to determine the homogeneity or otherwise of the opinions of the respondent for the t-test statistics the t-test results was compared with the significant value (using SPSS) at 0.05 level of significance and at appropriate degree of freedom. The null hypothesis was significant where the probability value was less than 0.05 significant level at appropriate degree of freedom otherwise the null hypothesis was not significant

Result Of the Study

The results of the study are presented according to research question and hypothesis that guided the study

Research Question 1

What are the economic implications of snail production for sustainable food security in Enugu State?

Table 1

Mean rating and standard deviation of respondents' responses on the economic implication of snail production for sustainable food security in Enugu State

S/N	Item statements	Extension agents		Snail Farmers		Overall		Decision
1	Snail provides meat for different food preparations	3.47	0.64	2.84	0.83	3.16	0.74	Agree
2	Snail meat improves healthy living as it supplies essential nutrients needed in the body	3.48	0.56	3.14	0.75	3.31	0.66	Agree
3	It provides economic benefits to governments in addressing the challenges of food security	3.37	0.69	3.28	0.81	3.33	0.75	Agree
4	It serves as alternatives to other animal proteins making food surplus to consumers	3.33	0.55	3.19	0.75	3.26	0.65	Agree
5	Snail meat has medicinal values such as in the prostate diseases	3.25	0.59	2.94	0.79	3.10	0.69	Agree
6	It increases the availability of animal protein	3.43	0.78	2.98	0.82	3.10	0.80	Agree
7	It provides economic advantages to the farmers and middle men in achieving food security	3.48	0.67	2.84	0.94	3.16	0.81	Agree
8	The liquid obtain from snail serves as food for infant development	3.26	0.54	2.93	0.95	3.10	0.95	Agree
	Cluster Mean/Standard deviations	**3.38**	**0.63**	**3.01**	**0.83**	**3.19**	**0.76**	**Agree**

The result of data analysis shows that the items overall mean ratings of the respondents range from 3.10 to 3.33, indicating that both extension agents and farmers agreed that all the items are economic implications of snail production for sustainable food security in Enugu State. The overall cluster mean of 3.19 further shows that the respondents agreed on items. The low cluster standard deviation of 0.76 obtained from data analysis indicates that the respondents have consensus opinion in their responses to the items.

Hypothesis 1

There is significant difference on the mean rating of extension agents and snail farmers on the economic implications of snail production for sustainable food security in Enugu State.

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Table 2:
Summary of t-test analysis of mean rating extension agents and snail farmers on the economic implications of snail production for sustainable food security in Enugu State

Variables	N	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Decision
Extension Agents	29	1.53	76	.305	7.104810	4.82525	NS
Snail Farmers	49						

The result of data analysis is Table 2 shows that the t-value at 0.005 level of significance and 76 degrees of freedom for the eight items is 1.53 with significant value of 0.305. sine the significant value of 0.305 is more than 0.05 level of significant, the null hypothesis is not significant. The implication is that there is no significant different in the mean ratings of extension agents and snail farmers on the economic implications of snail production for sustainable food security in Enugu State. Therefore, the null hypothesis is upheld.

Research Questions 2

What are the economic implications of snail production for job creation in Enugu State?

Table 3;
Mean rating and standard deviation of the respondents' responses on the economic implications of snail production for job creation in Enugu State

S/N	Item Statements;	Extension Agents N = 29		snail Farmers N=29		overall		decision
		X1	SD1	X2	SD2	XG	SDG	
9	It promote economic advantage by employing People in research and experiments	3.08	0.89	2.95	0.78	3.02	0.84	Agree
10	It facilitate the development of snail scale business such as in snail merchandize	3.49	0.78	3.08	0.68	3.29	0.73	Agree
11	Snail production provides employment to the Unemployed in order to earn living	3.09	0.86	3.15	0.78	3.12	0.82	Agree
12	It encourages the development of indigenous Manpower for increasing the Gross Domestic Products (GNP)							
13	It creates multiple economic gain for engaging The youth in the snail farming operations	3.35	0.53	3.08	0.81	3.22	0.67	Agree
14	Snail production provides farmers economic advantages to be creative for different job	3.27	0.93	3.24	0.68	3.26	0.81	Agree

	opportunities							Agree
15	It brings about equitable economic distribution through the employment opportunities	3.29	0.89	3.19	0.66	3.24	0.78	
16	Its facilities resourcefulness among the farmers Leading to self-reliance	3.25	0.95	3.09	0.60	3.17	0.77	Agree
	Cluster Mean/ Standard Deviation	**3.27**	**0.82**	**3.10**	**0.73**	**3.19**	**0.77**	Agree

The result of data analysis shows that the items overall mean ratings of the respondents range from 3.02 to 3.29, indicating that both extension agents and snail farmers agree that all items are economic implication of snail production for job creation in Enugu State. The overall cluster mean of 3.19 further shows that agree. The low standard deviation of 0.77 obtained from data analysis indicates that the respondents have consensus opinion in their responses to the items.

Hypothesis 2

A significant difference does not exist on the mean rating of extension agents and small farmers on the economic implication of small production for job creation in Enugu state.

Table 4;
Summary of t-test analysis of mean rating of extension agents and snail farmers on the economic implications of small production for job creation in Enugu State

Variables	N	t	df	Sig. (2tailed)	Mean Difference	Std.Error Difference	Decision
Extension Agents	29	1.053	76	.373	2.30641	2.78081	NS
Snail Farmers	49						

The data obtained from the t-test analysis in Table 4 shows that the t-test at 0,05 level of significance and 76 degree of freedom foe the items is 1.053 with a significant value of 0.373. Since the significant value of 0.373 is more than the 0.05 level of significant the null hypothesis is not significant. This means that there is no significant difference with respect to the items on the mean rating of extension agents and snail farmers on the economic implications of snail production for job creation in Enugu state.

Research Question 3

What are the economic implications of snail production for farmers Pofitability in Enugu State?

Table 5;
Mean rating and standard deviation on the economic implications of snail production for farmers for farmers 'profitability in Enugu State

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S/N	Item Statements;	Extension Agents N = 29		snail Farmers N=49		overall		decision
		X1	SD1	X2	SD2	XG	SDG	
17	It is cheap to rear therefore increasing profit	3.27	0.63	3.14	0.87	3.21	0.75	Agree
18	Snail farming provides non-seasonal productivity output	3.33	0.79	3.38	0.85	3.36	0.82	Agree
19	Snail requires medication that cost little or nothing as they feed on plants leaves and other things	3.46	0.67	3.44	0.98	3.45	0.83	Agree
20	Snail production may be carried out in any environment with less heat	3.32	0.64	3.03	0.95	3.18	0.80	Agree
21	Snail reproduce in large quantity under natural condition	3.18	0.87	3.15	0.78	3.17	0.83	Agree
22	Snail production profitability enables farmers to make judicious socio-economic decisions	3.39	0.68	3.08	0.98	3.24	0.83	
23	it assists farmers to understand the economy in order to know their responsibility as citizens	3.33	0.71	3.20	0.90	3.27	0.81	Agree
	Cluster Mean/ Standard Deviation	**3.33**	**0.71**	**3.20**	**0.90**	**0.27**	**0.81**	Agree

The result of data analysis shows that the items overall mean ratings of the respondents range from 3.17 to 3.45, indicating that both extension agents and snail farmers agree that all items are economic implications of snail production for farmers profitability in Enugu State. The overall cluster mean of 3.27 further shows that agreed. The low cluster standard deviation of 0.81 obtained from data analysis indicates that the respondents have consensus opinion in their responses to the items.

Hypothesis 3

There is no significant difference on the mean rating of extension agents and snail farmers on the economic implications of snail production for farmers' profitability in Enugu state.

Table 6:
Summary of t-test analysis of mean rating of extension and snail farmers on the economic implications of snail production for farmers' profitability in Enugu Sate

Variables	N	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Decision
Extension Agents	29	.739	76	.874	1.92049	2.68298	

NS

Snail Farmers 49

The result of data analysis obtained from the t-test in Table 6 shows that the t-value at 0.005 level of significant and 76 degrees of freedom for the items is 0.739 with a significant value of 0.874. Sine the significant value of 0.874 is more than 0.05 level of significant, the null hypothesis is not significant. This means that there is no significant different with respect to the items on the mean rating of extension agents and snail farmers on the economic implications of snail production for farmers in Enugu State.

Discussion of findings

The findings of the study with respect to research question one concerned the economic implications of snail production for sustainable food security in Enugu State. Among the implications of snail production for sustainable food security as identified by the study include that snail provides meat for different food Preparation; snail meat improved healthy living as it supplies essential nutrients needed in the body, provide economic benefits to government in addressing the challenges of food security; as alternative to other animal protein thereby making food surplus to consumers. Also has medicinal values such as improved disease and increases the availability of animal protei among others

The findings of the study are in agreement with Ojo and Zira (2017) on the economic analysis of edible snail production in achieving food security. Ojo and Zira (2017) noted that increasing the quantity and quality of snail production have implication in achieving sustainable food security in food security especially in the case of production of animal protein for increasing population. This supports the findings that showed snail production has economic implication in achieving food security in Enugu State. In addition, the findings of this study despicted that there was no significant difference in mean response of extension agent and snail farmers on the economic implication of reproduction for sustainable food security in Enugu State. Therefore the status of the respondents had no influence on the identify economic importance of milk production in achieving food security

Further the finding of the study depicted the economic implications snail production for job creation. The identify implications of snail production to job creation include that the production promote economic advantages by employing people in research and experiments and facilitate the development of small-scale businesses such as in the Snail merchandise. Also, snail production provide employment to the unemployed in order to earn living, it encourages the development of indigenous Manpower for increasing the Gross Domestic Product and create multiple economic gain for engaging the youth in snail farming operation. Furthermore, it provides farmers economic advantages to be creative and responsive to different job opportunities. The findings reveal that snail production create job for young and old which therefore provide them with economic power to live sustainably. The identify economic implications are supported by Akinnusi (2013) and Ahmadu and Ojoho (2012) who noted that snail farming provide all kinds of jobs including small scale business Enterprise development. Again, Ahmadu and Ojoho (2012) observed that snail farming and production activities provides employment through research, Farming, processing, sales and marketing of snail meat and supply of medical and agricultural applications. This implies that the identified are the economic implications of snail production for job creation in Enugu State

The finding on the null hypothesis indicated that there was no significant difference with respect to the items on the mean rating of extension agents and snail farmers on the economic implications of snail production for job creation in Enugu State. The finding of no significant difference depicted that the respondent status had no significant influence on the validity of the items regarding economic implications of snail production for job creation.

Furthermore, the findings of the study showed the economic implications of snail production for farmers profitability in Enugu State. The result of the study indicated that the economic implications of mail Productions for farmers profitability where that; production is cheap to rear compare with other poultry animals therefore increasing profit, Snail farming provide non-seasonal productivity, requires medication that cost a little or nothing as its feet on plant leaves and other things, Production may be carried out in any environment with less heat. Snail reproduced in large quantity under natural condition. Snail Production profitability enables farmers to make judicious social economic decision among others. The finding of the study is in line with Yahaya (2012) and Efarmspro (2016) who pointed out that snail farming provides the Farmers with huge economic benefits. Efarmspro (2016) stressed that snail farming does not require much medication and it feeds virtually from all kinds of vegetables, kitchen waste and spoilt fruits. Yahaya (2012) opined that nail grow in conducive natural environment with little or no assistance of the farmer in terms of improving the environment

The finding on the null hypothesis indicated that there was no significant difference with respect to the items on the mean rating of extension agents and snail farmers on the economic implication of production and farmers profitability in Enugu State. The finding of no significant difference depicted that the respondent's status has no significant influence on the relevance of the items on the economic implications of production for farmers profitability

Conclusion

The study examined the economics of reproduction in Enugu State. It was found that snail production required no capital investment, little medical attention, adapt to every environment hence farming operation in which low-income earners could comfortably emback upon. It was also found that snail production has implication in achieving sustainable food security as it provides alternative to other animal protein and create job for Economic independence and highly profitable. therefore, snail production could serve as a veritable Enterprise for uplifting the living standards of its Farmers and consequently the economics of the Nation. Based on the major findings of the study the following conclusions are drawn. Snail farming is a profitable venture carried out with adequate management and the right type of breed, it can be handled as a part-time family operation because it is not time consuming, a large number of food consumed by the snails come from domestic waste and Green's feed which made the cost of feeding to be low. Based on finding, study concluded that people should be trained to engage and invest their time and money into snail production for an economic benefit in Enugu State

Recommendation

In view of the findings and conclusions of the study, The following recommendation were made;

More people (especially the young) Should venture into snail production while currently farmers should enlarge the production for sustainable food security

Government should Direct efforts towards the Promotion of snail farming as it creates job for the people

Because of the profitability of snail production and it's low capital investment nature, snail farmers without substantial capital, unemployed youth and other investors should enhance the opportunity for more economic gain.

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