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Profitability of Snail Production in Oil Palm Plantation in Edo State, Nigeria

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ABSTRACT

This research study on the profitability of snail production in oil palm plantation, in Nigeria was conducted at the Nigerian Institute for Oil Palm Research main station in Benin City, Edo State, with the objective of determining the cost and returns from the enterprise. Data collected were analyzed using the budgetary technique. The results from the cost analysis showed that total fixed cost (TFC) through depreciation constituted 4.01% of the total cost, while the total variable cost (TVC) made up of cost of paw-paw fruits, water melon, egg shells, transportation and labour was higher with a large margin and constituted 95.99 % of the total cost. Results from the returns analysis showed that the enterprise was very profitable with a net profit of ₦239,371, gross profit margin ratio of 80%, and return on investment (ROI) of 4.95. The return on capital invested is an indication that for every one naira invested in the business, four naira, ninety-five kobo is realized. This is a confirmation of the financial viability of the enterprise. Aggressive awareness campaigns should be created by the Agricultural Development Project (ADP), Extension Agents and other related agencies of government on investment opportunities in snail farming in an Oil Palm plantation so as to compensate for the long gestation period of the oil palm cultivation and most importantly for more income generation.

Key words: profitability, snail, oil palm, plantation, investments**, cost**

1.0 INTRODUCTION

1.1 Background of the study

Snail farming (Helicicultire) is vital agricultural sector in many parts of the world because of its role in production of animal protein (Idamokoro and Niba, 2025). Though it is a very valuable source of animal protein, it has not received adequate attention in Nigeria, (Baba and Adeleke, 2006; Cobbinah *et al*., 2008). It is among the miniature livestock that has recently been made popular among the Nigerian livestock farmers as an alternative source of protein as part of campaign of the Food and Agriculture Organisation (FAO) on the insufficiency of protein intake derived from animals among Nigerian (Adesope, 2000). Numerous farming methods have been embraced yet Nigeria's daily animal protein intake *per capita* (assessed as under 10gm) stays a long way below the suggested least prerequisite of 35g *per capita* (FAO, 2022). In order to close this gap, it has been proposed that it becomes necessary to have a cursory look into other alternatives of animal protein to complement the common sources which include beef, cheven, mutton, pork and chicken meat.

FarmNest 2024 reports that snails are hermaphrodites, live for 3 -5 years and each snail can lay over 500 – 900 eggs twice a year, which indicates that they are very prolific. NMS 2024 posits that Snail meat is increasingly recognized as a super food, rich in high-quality protein, iron, calcium, and Omega-3 fatty acids while being low in fat and cholesterol. These attributes make it ideal for managing conditions like diabetes, hypertension, and obesity. In traditional and modern medicine, snail mucus is highly valued for its therapeutic properties, including wound healing, anti-inflammatory effects,

and skincare applications. These health benefits are paving the way for snails to play a crucial role in improving public health in Nigeria. Babban Gona 2022 observes that due to the limited number of snail farmers in Nigeria, there is a huge gap between demand and supply in the country

Apart from the medicinal advantages, snail production is an essential source of income generation for farmers in rural and urban areas of Nigeria. More awareness should be created on snail farming as an alternative source of sustainable animal production (Adewale and Kafayat, 2022). Snail generally has been perceived as a valuable protein source for Nigerian. The productivity of snail farming depends to a great extent on the utilization of current improved techniques which requires acquiring knowledge on snails' inputs, hatchery, feeding, housing, processing and marketing (Adewale and Kafayat, 2022). Ongoing improvement in snail production includes the use of concentrate diets which requires elaborate knowledge and skill development from experts (Jimoh and Akinola, 2020). Snails are commonly fed on diets such as fruits of pawpaw, pineapple, banana, pear, egg shells, oil palm leaves, watermelon and leaves of cassava, cocoyam, and water leaf, amongst others.

Snail rearing has various benefits some of which include: economics of managing housing types, health and feeding system Snail production is high adaptability to various climatic variations and can be reared in rural and urban areas. They have high fecundity, very prolific in terms of reproduction, high conversion rate of feed to flesh and high health restorative worth with prophylactic and curative functions for certain diseases such as hypertension (Adewale and Kafayat, 2022). Agbogidi *et al*. (2008) opined that snail contains a relatively high amount of protein and iron and a low amount of fat. Given that snails are of small sizes, quiet and slow moving creatures, simple to raise as against other livestock, they can be raised in urban areas without encroaching and disturbing the neighbourhood (Agbogidi *et al*., 2008; Okonkwo *et al*., 2013). More so, for the purpose of enterprise combinations with the oil palm plantation to provide additional source of income whose investment in terms of finance, manpower time and space is relatively low and affordable. Snail production fits perfectly into these requirements because the capital outlay is affordable, relatively cheap to start and manage.

There are various species of snails which includes:, *Achatina marginata Achatina achantina and Achatina fulica.* The Achatina marginata is the most popular specie and recommended for any new entrant into the business of commercial snail farming. The Jumbo specie *marginata* and the Non-Jumbo specie *marginata* are both members of the *Achatina marginata* family. As its name implies, the jumbo specie grows and develops larger and faster than the non-jumbo specie. While the jumbo specie has no growth restrictions, the non-jumbo specie has. The Jumbo specie can attain a reasonable size in one year or less, however the non-Jumbo specie cannot attain such size. Snail farming has been perceived to be highly profitable and offers a high return on investment (ROI). Against this backdrop, this study examined the profitability of rearing snails in an oil palm plantation as an enterprise combination.

1.2 Objectives of the Study

The main objective of this research study was to examine the profitability of snail production in an oil palm plantation. Specifically, the study examined the cost and returns in snail production and also estimated the return on investment (ROI)

1.3 Justification

Findings from the study will create awareness on the profitability of snail production and will also serve as a useful guide for oil palm producers in the oil palm and snail production enterprise combination

2.0 METHODOLOGY

2.1 Study Area

The study was conducted at 14 oil palm plantations at the, NIFOR main station, Benin City.

2.2 Analytical tools

The budgetary technique was used to analyze the data collected on cost and returns. These include the Net Income analysis and the Return on Investment (ROI)

2.3 Analytical Procedure

2.3.1 Net Income analysis

Net Income analysis was used to estimate the costs and returns of snail production

NI = TR – TC.

And TC = TVC + TFC

Where,

Nl = Net IncomeTR = Total Revenue

TC = Total Cost (Total Fixed Cost + Total Variable Cost)

TVC = Total Variable Cost

TFC = Total Fixed Cost

2.3.2 Return Per Naira(₦) On Investment

ROI = TR/TC

where ROI = Return (per naira₦) on investment

3.0 RESULTS AND DISCUSSION

3.1 Fixed Cost

The straight-line method was used in calculating the depreciation of fixed cost items, which include cost of: wire collar net, machetes, cement, planks, and nails.

Total depreciation of annual fixed cost amounted to ₦2,429 (Table 1).

Table 1: Fixed Cost Per Annum

S/N	Items Of Cost	Qty	Unit Cost(₦)	Total Cost(₦)	Assumed Life Span(Yrs)	Assumed Scrap Value(₦)	Depreciation Per Annum(₦)
1	Wire collar net	1	16,000	16,000	8	6,000	1,250
2	Machetes	1	2,000	2,000	13	500	115.38
3	Plank (wood)	14	1,200	16,800	8	9,000	975
4	1 inch nail(pound)	2	1,000	2,000	17	500	88.24
	Total Fixed Cost (Depreciation)						2,429

Source: Generated, by author, from field survey, 2022 data survey

3.2 Variable Cost

Table 2 presents total variable costs, which include cost of; breeding stock (point of lay snails), egg shells, water melon, paw-paw fruits, labour and transportation. Total Variable Cost constituted 95.99% of the total cost (TC), with the cost of point of lay snails being the highest variable cost incurred and accounted for 36.08% of TVC. The very high proportion of variable cost agreed with the work of Mailomo *et al.* (2005), and also with the work of Esobhawan, 2007, where variable cost constituted 93.61% of the Total Cost (TC)

Table 2: Variable Cost per production cycle

S/N	Items	Qty	Unit Cost(₦)	Total (₦)	% of TVC
1	Breeding stock (Point of lay snails) bought	30	700	21,000	36.08
2	Eggs (4crates)	120	100	12,000	20.62
3	Water melon	24	500	12,000	20.62
4	Paw-paw fruits	24	300	7,200	12.37
5	Labour			4,000	6.87
6	Transportation			2,000	3.44
	Total			**58,200**	**100**

Source: Generated, by author, from field survey, 2022 data survey

3.3 Profitability/Net Revenue Analysis

Table 3, presents the breakdown of the profitability in the study Net revenue or profit was calculated at ₦239,371 while profit per unit snail reared was ₦797.90k. The gross profit margin, which is the percentage of revenue that exceeds the total cost was calculated at 80%. The high gross profit margin is indeed a confirmation of the high level of profit in the business. This finding is in line with that of NMS, 2024 who commented that with increase in local and international demand for snail products, snail farming has the potential to generate substantial income for rural and urban communities alike.Beside the Gross Profit Margin, another performance assessment metric, the Return on Investment (ROI) was used to further confirm the viability of the business. The ROI calculated was 4.95 which suggests that for every ₦1 invested in the business, ₦4.95k is realized. This finding is in line with the study of Adewale and Belewu 2022, which found that for every naira invested in snail farming N1.96 was realized.

Table 3: Profitability/Net Returns Analysis per production cycle

S/N	Items	Amount
1	Breeding stock (*Achatina Marginata)* purchased	30
2	Number of table size snails produced @ 10 baby snails to 1 point of lay snail amidst mortality	300
2	Total revenue @ N1,000 per table size snail **(₦)**	300,000
3	Total Fixed Cost (TFC) **(₦)**	2,429

S/N	Items	Amount
4	Total Variable Cost (TVC) **(₦)**	58,200
3	Total Cost (TFC + TVC) **(₦)**	60,629
4	Net Income/profit **(*π*)** (TR-TC) **(₦)**	239,371
5	Cost of raising one snail**(₦)** (TC/n)	202.10
6	Profit per snail**(₦)** (π/n)	797.90
7	Gross profit margin ratio (TR-TC/TR x 100) (%)	80
8	Return on investment(ROI) (TR/TC)	4.95

n= number of snails. Source: Generated, by author, from field survey, 2022 data survey

4.0 CONCLUSION

The status of snail meat has increased the demand for snails and has also increased the snail production and marketing in Nigeria. Snail meat is increasingly being marketed in Nigeria due to its nutritional, therapeutic, and economic value**.** Snails are highly profitable and offer a high return on investment (ROI) as evident in this research study. More so, the cost of starting a snail farm is low and less laborious. Therefore, the study's recommendation that oil palm producers can combine snail farming with its production due to the high values of net income and returns on investment.

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