

## **Opportunities for Increasing Peasant Farmers Income through Snail Production in Ghana**

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**Abstract:** This study attempt to reveal the opportunities for increasing peasant farmers income through snail production in Ghana. The paper stressed that snail production is a crucial means of increasing peasant farmers income, protein supply and utilization of farm scraps in Ghana. This is because, from putting up structure, obtaining snails and feed, caring to harvesting, snail production is very cheap. The meats of snails are very nutritious, have several medicinal values and economic benefits. The paper also emphasized why peasant farmers can increase their income through snail production.

**Keywords:** Ghana, peasant farmers, Snail production, ready market

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### **INTRODUCTION**

Snails are bilaterally symmetrical invertebrates with soft-segmented exoskeleton in the form of calcareous [6]. It is however, a micro livestock that has recently attracted attention among peasant farmers in Nigeria as an aftermath of alarm raised by Food and Agriculture Organization on animal protein deficiency [3, 10]. Their production has become important in Ghana because, they have being recognized to have a long-standing and widespread importance as a source of human food [38]. The small size of these micro livestock animals (snail) is undoubtedly one of their most significant assets since it make it possible to produce and manage on small areas and in cluster [39].

According to [15], *Achatina achatina* is specially a delicacy to the snail consuming Ghanaian populace. The meat is socially well accepted in many parts of Ghana. It tenderness and fine texture make it the most suitable meat for all ages [6]. Traditionally, snail meat has been a major ingredient in the diet of people living in the high forest zone [6] of which the actual protein consumed by these rural people is not sufficiently supplied by crop production [9]. The meat provides an excellent source of protein in the diet of rural and urban poor households in Ghana [19] with protein content being higher than that of conventional food animals [30,40].

Snails have high medicinal values that help in the prevention and curing of cardiovascular diseases such as hypertension, kidney diseases, tuberculosis, anemia, diabetes and asthma [33,17]. It is also believed in Ghana that, the bluish liquid obtained when the flesh

of a snail is removed from it shell is good for infant development [21].

Like many other agricultural activities, production of snails provides some economic benefits to the peasant farmers in rural areas [7]. The money realized from the sale of the snails is added to sale from crop produce for many purposes including training of their children and meeting other household needs [6].

Snail meat is very popular in Ghana and it importance has being recognized. The need to focus on production of snails cannot be overestimated because, the take off investment (capital) for their production is low due to moderate nutrition, management on small area of farm size and the use of local equipment, farm products and scraps [5]. Snails are commonly found on farm clearings, along roadsides and footpaths, and also backyards in villages and towns [15]. They can be fed with pawpaw (leaf or fruits), cocoyam leaf and vegetables [18], household and market waste [42].

However, attention has not being paid to snail production in Ghana which is also a source of income to the peasant farmers [6]. Peasant farmers are intensively depending on crop production as their main source of income and protein supply, mean while there are opportunities to snail production in Ghana.

It is against this background that a study as this has been embarked upon. The present review is an attempt to reveal the opportunities for increase peasant farmers income through snail production in Ghana.

## Snails

Snails are soft-bodied invertebrate belonging to the phylum Mollusca [20]. [6] argue that snails are bilaterally symmetrical invertebrates with soft-segmented exoskeleton in the form of calcereous. It is however, a micro livestock that has recently attracted attention among farmers in Nigeria as an aftermath of alarm raised by Food and Agriculture Organisation on animal protein deficiency among Nigerians [3,10].

The micro livestock therefore refers to species of animals that are associated with small body size, moderate nutrition and management [11]. The small size of these micro livestock animals (snail) is undoubtedly one of their most significant assets since it make it possible to produce and manage on small areas and in cluster [39]. This makes production affordable for people (peasant farmers) with small compound or poor ones.

### IMPORTANCE OF SNAIL

Snails play an important role in income generation, nutrition and health.

#### 1. Economic importance

[6] reported that snails are an important source of income for some farmers who dwell in the rainforest areas and their fringes. [7] also indicated that like many other agricultural activities, production of snails is a source of income to the peasant farmers in rural areas to support families. The money realized from the sale of the snails is used for many purposes including training of their children and meeting other household needs [6].

Again, snails are also utilized for a lot of decorative works and carvings such as flower vases, ash trays and other interior decoration thus making them to have additional economic values [17].

#### 2. Nutritional value

The *Achatina* species are all eaten in Ghana [31]. *Achatina achatina* is specially a delicacy to the snail consuming Ghanaian populace [15]. Its meat is tasty, tender and highly nutritious. The meat is socially well accepted in many parts of Ghana. Its tenderness and fine texture make it the most suitable meat for all ages [6]. Traditionally, snail meat has been a major ingredient in the diet of people living in the high forest zone [6] of which the actual protein consumed by these rural people is not sufficiently supplied by crop production [9]. Snail meat provides an excellent source of protein in the diet of rural and urban poor households in Ghana [19] with protein content being higher than that of conventional food animals [30,40]. The meat is also rich in iron [7], potassium, phosphorous, essential amino acids and vitamins C and B complex [17, 35] and low in fat [21]. The table below shows a proximate composition of fresh snail meat.

**Table 1: Proximate composition of fresh snail meat**

Nutrient	Wosu (2003) [40]	Ogbeide (1968)[43]
Crude protein	20.70%	18.20
Carbohydrate	2.93%	2.88
Ether extract	-	1.36%
Fat	1.21%	1.01%
Crude fibre	-	0.07%
Ash	1.49%	1.37%
Nitrogen free extract	-	4.95%
Iron	-	12.2mg/100g
Water	73.67%	74.06%
Other mineral constituents	-	60.5mg/100g

#### 3. Health benefit

Snails have high medicinal value. They are used in the prevention and curing of cardiovascular diseases such as hypertension, kidney diseases, tuberculosis, anemia, diabetes and asthma [17, 33]. [1] reported that the meat of snails also has low fat and cholesterol level which makes it useful in the treatment of arteriosclerosis and other heart-related diseases. In Ghana, it is believed that the bluish liquid obtained when the flesh of a snail is removed from its shell is good for infant development [21].

#### Opportunities for snail production

Research has shown that snail production is a very profitable business [8,34] which can be used in reducing poverty among peasant farmers [6]. However, there are several opportunities for snail production to increase income from crop sales by peasant farmers in Ghana. These opportunities include ready market for snails, use of locally available materials to raise snails, free picking of snails, snails being vegetarians, less time needed and controlling of malnutrition.

#### 1. Ready market for income generation

There is availability of ready market for snails [17] which exist for snail for both domestic consumption and export [23]. According to [36], there has always been an enthusiastic demand for fresh snails in the domestic Australian market and French restaurants are paying top dollar for fresh snails. There is also a high demand from pet suppliers for the distribution of snails as food for most reptiles particularly for blue tongue and the bearded dragon lizards. Paris alone consumes over 100 million snail's product every year [12, 23]. Snails are sold in general food markets and are purchased by restaurants [37]. This has contributed immensely to the diets of both rural and urban dwellers serving either as delicacies (also known as "congo meat") or used in dishes in Ghana and Nigeria [32]. Snail shells are also needed for a lot of decorative works and carvings such as flower vases, ash trays and other interior decoration [17]. Snail production is however seen as a highly

profitable venture [34], and a subsidiary source of income for majority of farmers [18].

## 2. Use of locally available materials to raise the snails

Housing and equipment requirements for producing snails are adequately satisfied by improvisations from local farm products and scraps [5]. Again the snail enterprise depends solely on decay plant materials or waste from the home [27]. According to [23] snails are easily handled, transported and managed by children and women with minimum training which leads to keeping down production cost. Snails adapt to various environmental conditions which makes them possible to be raised in small towns, cities, farms, at backyards or commercial levels and villages [6]. [5] also stated that, moderate nutrition, management on small area of farm size and the use of local equipment are what are needed to produce snails. These are contributing to low take off investment (capital) for snail production [5].

## 3. Free picking of snails

In Ghana, snails are found within the dense forest floors in the forest zone and also in the humid riparian forest floors where they are traditionally gathered especially at night and before dawn by rural folks during the raining season for sale and domestic consumption [29, 32, 34]. [15] also reported that snails are commonly found on farm clearings, along roadsides and footpaths, and also backyards in villages and towns in Ghana. These snails can be collected from the wild and their habitats by children and women, and easily domesticated and controlled [22].

## 4. Snails being vegetarians

As the snail is vegetarian, it likes a variety of food such as vegetables and natural grain- based cereals [37]. [6] reported that snails in African have voracious appetite. They are known to eat at least 500 different types of plants including peanuts, beans, peas, cucumbers and melon. If fruits or vegetables are not available, the snails will eat a wide variety of ornamental plants, tree bark, and even paint and stucco on houses [11]. According to [18], farmers feed snails

with pawpaw (leaf or fruits), cocoyam leaf and vegetables. It is even possible to feed these micro livestock animals (snail) with household wastes [16]. The household wastes includes peels of fruit and tuber, like banana, plantain, pineapple, yam, cassava, cocoyam especially pawpaw, and leftovers like cooked rice, beans and fufu [42]. The snails can also be fed with market waste which is perishable vegetables and fruits are still useful for their consumption and can be collected from damping areas. This reduces cost and labour of buying or cultivating vegetables, fruits and tubers only to feed snails [42]. The snails ability to utilize these variety of readily available feeding materials helps them to achieve appreciable weight gains under intensive management and the high dietary value of their meat make it a suitable and cheaper alternative to other animal protein sources [4].

## 5. Less time needed

[42] stated that, snail farming can be handled as a part-time business because it is not time consuming. The practice requires little labour with no strenuous physical exertion [28]. Physically challenged people including the dumb, lame; deaf etc can also carry out the work. This is because the snails are noiseless and quite easy to handle [7].

## 6. Controlling of Malnutrition

One of the most serious nutritional problems in the developing countries of which Ghana is not excluded is the shortage of high protein food from animal sources [18]. Animal proteins are more biologically complete than vegetable protein because they contain a complete range of amino acids that are essential for maintenance of health [26]. Peasant farmers can raise micro livestock animals (snail) for unconventional sources of animal protein on their backyard gardens or farms [25]. This can however serve as the major and cheapest source of protein in Ghana and most of the African countries [2, 41], because it compares favorably with other conventional source of animal protein like beef, pork, goat meat, mutton and poultry meat [11,15]. Below is a table that shows the nutritional values of snail compared with other conventional sources of animal protein.

**Table 2: Nutritional values of snail compared with other conventional sources of animals protein**

Food items	Carbohydrate	Protein	Fat	Ash	Water
Snail meat	2.93	20.70	1.21	1.49	73.67
Beef	-	17.5	22.0	0.9	60.0
Pork	-	11.9	45.0	0.6	42.0
Lamb	-	15.7	27.7	0.8	56.0
<b>Poultry</b>					
Chicken	-	20.2	12.6	1.0	81.8
Duck	-	16.2	30.0	1.0	68.6
Turkey	-	20.2	20.2	1.0	79.3
<b>Milk</b>					
Cow	5.0	3.5	3.8	0.7	87.3
Goat	4.5	3.8	4.8	0.8	86.4

Source: Wosu (2003) [40].

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### Why peasant farmers can increase their income

Snail production has become important in Ghana [38]. This is because snails have been recognized to have a long-standing and widespread importance as a source of human food. Ghana now consumes over 15,000 tones of snails a year, but not even a quarter of the number is harvested in the country. About 13,000 tones are brought from neighbouring Cote d'Ivoire which also eats annually 79,000 tones of snails [21]. Previous research by [36] reveals that there is an enthusiastic demand for snails in the domestic Australian market and French restaurants which are paying top dollars for snails, with earnings from it exports running into tens of millions of Ghana Cedis (GHC). It can therefore be seen that snail production can also be considered as a new goldmine of economic venture in Ghana since there is a high demand of snails in both international and export markets. Peasant farmers are unable to recognize this but rather paying much attention to their crop which does not even satisfy their entire family let alone to go for international or export market.

Again, in the past, snails were abundant in the forest. Peasant farmers simply gather them for meals and even place some in trays for sell on roadsides. There was no need for people to raise them. However, continuous degradation of forest and bush burning has damaged snail habitat and made it difficult for people to find snails as they used to. [24] reported that, because of difficulty in finding snails, the few remaining species are captured before they reach maturity. There are demands for snails at both rural and urban markets in Ghana. Due to this farmers who are able to get some process the meat by dry smoking it and sell it at a high cost at these markets. This shows that there is an important niche market for its production. Therefore peasant farmers can produce snails, both on small scale and large-scale production systems and sell them at

premium price along roadsides and rural and urban markets. This will be in support to the funds that are raised from the sale of some of their crop produce and as a crucial means of generating income. This will also help the peasant farmers to achieve self sufficiency in hard times as presently experienced in Ghana today.

Usually, snails are very scarce during the dry season hence expensive at this period [13]. The seasonality supply of the snails however, limits their use on continuous basis. In Ghana, upon the expensiveness of the snails in the dry season, pregnant women and nursing mothers still buy them and sometime do not even get some from both the rural and urban markets. They are with the belief that the snail meat and its bluish liquid is good for infant development [21]. Their domestication could make them more readily available all year round [6]. About four averaged sized snails weighing between 100 and 150 grams sell for GH C10.00 on local market during the off season, but the same quantity can sell for about GH C2.00 in the rainy season. Currently, there is rising inflation in Ghana which has resulted in increase of cost of conventional animal protein sources. This has led to shift from conventional animal protein sources to micro livestock animals (snails), which tells peasant farmers that they can easily make a good income from their production. Their production therefore will go a long way to reducing some poverty problems among peasant farmers in Ghana, Nigeria and other African countries which has been reported by [6].

However, research has shown that snail production is a cost-effective and profitable farming activity that does not demand a lot of start-up or time [34]. Housing and equipment requirements are adequately satisfied by improvisations from local farm products and scraps [5].

*According to a peasant farmer in Ghana, he obtains snails from walking path ways to farm sites, nurseries at his backyard and sometimes at the dumping or garbage site. With the housing, he digs a pit under a tent that he can walk under. He then put the snails in the pit and covers it with a net to prevent flies from visiting the snails. The materials he used to build the tent are tree branches for standings and palm fronds for roofing. Saying that all these materials are from his farm.*

Source: An interaction with a peasant farmer

It can be seen that peasant farmers can organize the materials or equipments for the establishment of snail farm from their own locality.

Again, the snails depends on vegetable, leaves, fruits, tubers and household waste which are readily available in the rural areas. The peasant farmers can easily mobilize these feed materials from their farms and homes with no cost. This will contribute to the least production cost of the snails.

### CONCLUSION

This study attempted to determine and reveal the opportunities for increasing peasant farmers' income through snail production in Ghana. The paper stressed that snail production is a crucial means of increasing peasant farmers income, protein supply and utilization of farm scraps in Ghana. Also to help peasant farmers to achieve self sufficiency in hard times as presently experienced in Ghana today.

### RECOMMENDATION

Government should take more than a cursory interest in snail production by supporting peasant

farmers with extension officers and train them with modern technologies in snail production.

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