

Building Capacity for Snail and Mushroom Farming in Rural Communities of Imo State, Nigeria

¹Pat-Mbano, E. C. and ²Chikwendu, L.

¹Department of Urban and Regional Planning, Imo State University, Owerri.

²Department of Geography and Environmental Management, Imo State University, Owerri.

Corresponding Author: Pat-Mbano, E. C

ABSTRACT

Obviously, food insecurity, diminishing quality of health and increasing environmental degradation are the three key underlying problems affecting the future well being of Mankind. Nigeria, despite having a majority of her population engaged in Agriculture still imports over 90% of her food products. Huge amount of money is invested in the health sector with a lot of people importing herbal drugs. There is also an urgent need to diversify the economy as Oil which is a limited resource is their major source of the country's revenue. Farmers in the rural areas lack the knowledge and capacity to engage in non Timber Forest Products (NTFP) that can serve both as money spinner and health builder. The involvement of farmers in rural communities of the three senatorial zone were evaluated, personal observations and interview of government agencies and stakeholders were also conducted. A structured questionnaire were sampled to 120 respondents in Eziudo, Ezinhitte Mbaise Local government area (Owerri zone), Umuagwo, Ohaji/Egbema Local government area (Orlu zone) and Isuochi, Okigwe Local government area (Okigwe zone) in Imo State respectively. Data obtained were analyzed using descriptive statistics. Tables, percentages and graphs were also employed for the analysis. Findings revealed low level of involvement in snail and mushroom farming. Their involvement is hampered by information flow, ignorance of the importance of snail and mushroom farming, lack of funds/empowerment and skill in the management of such venture. Suggestions were made to address the fundamental strategies that can improve the introduction, practice and management of snail and mushroom farming in the study area.

Keywords: snail and mushroom farming, rural communities, food insecurity, building capacity, non timber forest products

INTRODUCTION

Snails belong to the animal family known as *Mollusca*. They respire through the lung hence belongs to the group called *pulmonata gastropod*. In West Africa, snails dwell mostly in humid forest areas from where they are gathered by villagers for consumption and other uses (Ademosu and Omidigi, 1999). Obviously, there is no reliable documentation on when and where man started consuming snails as a food supplement but the practice of picking snail for food and selling the surplus as a source of income has been for a long time. Snails are sluggish in movement and very active at night.

Snail meat has a high medicinal value and has been a major ingredient in the diet of people living in high forest zone of Nigeria. The Snail meat can control hypertension and its blue liquid is used in stopping excessive bleeding from open wounds.

In Nigeria, there is the need to diversify the economy as agriculture potentials remains greatly underutilized. Snail farming can definitely be a veritable means of

generating income, reducing health problems and to achieve self sufficiency during difficult times as experienced in both rural and urban areas of Nigeria.

The need to enhance the mass production of Snails cannot be overemphasized because Snails can be reared both on a small scale and large-scale production systems (Elimsile, 1982). In recent times however, there is renewed interest in snail farming because of its vital role to good health, food security and sustainable rural livelihood.

Mushroom on the other hand, can be used to describe the fruiting body of a fungus (Ilori, et al., 1997). It is vital to reiterate that fruit bodies of fungi had been utilized as food for more than two thousand years now. Mushrooms are widespread in nature often cultivated traditionally by using palm wastes and *Sclerobolus* for household consumption. The practice of picking mushroom for food and medicine is common among the different tribes in Nigeria.

This practice although reported all-over the country is more pronounced amongst the Yoruba speaking people (Alabi, 1991).

Mushroom lack chlorophyll presents in plants and represents one of the world greatest untapped resources of food that is highly nutritious and medicinal. They are classified under subdivision *Basidiomycotina* and grow on dead and decaying material. Though, mushrooms are harvested by majority of tribes in Nigeria. However, due to past unpalatable experiences with poisonous species of mushrooms, many people are conscious about their safety in venturing into it. Thus, for the few species of *Pleurotus* and *Auricularia* that are common and easily identified, consumption or picking of wild mushroom is becoming unpopular.

It is saddening to see that people from all works of life associate mushrooms with negative events in Nigeria and most Africa countries (Yongabi et al; 2004; Akpaja et al; 2005). In recent time however, many Nigerians yearn for the commercial production of edible mushroom for food and medicinal needs. Mushroom cultivation is environmental friendly. Mushroom plays a pivotal role in sustaining eco-energy balance in nature (Jupponen et al., 2004). Be as it may, enhancing farmers capacity in a non-timber forest activities like Snail and mushroom production will not only boost the food and medicinal supplement of the people in the study area but also help in sustaining the over burdened environment. The issue of environmental degradation is quite critical in Imo State, where more than 80 % of the population depends on forest products for survival (NCF, 2000).

Nevertheless, Nigerian farmers are still ignorant of the high demand for snail and mushroom due to its food and medicinal benefits. They also lack the adequate skill, technology and even the capital in going into Snail and Mushroom farming.

This paper examine the essence and capacity building of Snail and Mushroom farming as regards to health, food, environmental sustainability and even means of livelihood in the study area.

IMPORTANCE, USES AND PROSPECTS OF SNAIL AND MUSHROOM FARMING IN NIGERIA

A recent study shows that the *glandular substaitles* in edible snail meat cause agglutination of certain bacteria, which could be used in combating a variety of ailments including whooping cough. The giant African snail a common variety is said to 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 vegetable are not available, the snails will eat a wide variety of ornamental plants, tree bark, and even paint and stucco on houses (Akinnusi, 1998; Akintomide, 2004).

Table 1. A Proximate composition of fresh snail meat

Nutrient	Value
Crude protein	18.20%
Carbohydrate	2.88%
Ether extract	1.36%
Fat	1.01%
Crude fibre	0.07%
Ash	0.37%
Nitrogen free extract	4.95%
Iron	12.2MG/100G
Water	74.06%
Other mineral constituents	60.5m/100g

Adapted from Ogbeide (1968), Wosu 2003.

The recent increase in the demand for animal protein consumption in Nigeria with continuous rise in inflation has made it unaffordable to an average Nigerian. There is therefore a general shift from animal protein to plant protein.

Table 2. The Nutritional Values of snail compared with other food animals (%)

S/N	Food Items	Carbohydrate	Protein	Fat	Ash	Water
1.	Snail meat	2.93	20.70	1.21	1.49	73.67
2 a)	Beef	—	17.5	22.0	0.9	60.0
b)	Pork	—	11.9	45.0	0.6	42.0
c)	Lamb	—	15.9	27.7	0.8	56.0
3.	Poultry	—	—	—	—	—
a)	Chicken	—	20.2	12.6	1.0	81.8
b)	Duck	—	16.2	30.0	1.0	68.6
c)	Turkey	—	20.2	20.2	1.0	79.3
d)	Dried fish	—	60.0	21.0	15.0	4.0
4	Milk	—	—	—	—	—
a)	Cow (whole milk)	5.0	3.5	3.8	0.7	87.3
b)	Goat	4.5	3.8	4.8	0.8	86.4
5.	Eggs	—	—	—	—	—
a)	White of egg small amount	10.5	Small amount	1.0	88.0	—
b)	Yolk of egg small amount	15.5	33.5	1.0	45.5	—

Adapted from Wosu 2003. **Note:** Ash contains mineral

METHODOLOGY

Politically, the study area Imo state Nigeria is divided into 3 zones for administration. One rural community each were selected for this study. They are Umuagwo in Ohaji/Egbema Local Government Area (Orlu Zone), Eziudo Community in Ezinihitte Mbaise Local Government Area, (Owerri zone) and Isuochi in Okigwe LGA (Okigwe zone). A total of 120 structured questionnaires were randomly sampled and distributed in the study area. 40 questionnaires for each of the 3 rural agrarian communities. However, 8 of the questionnaire were unable to be retrieved. A total of 112 questionnaires completed by respondents were retrieved thus; Umuagwo 39, Eziudo 37 and Isuochi 36. Also, the researcher made use of personal observations, interview of stakeholder and leaders in the community to enhance the quality of this research.

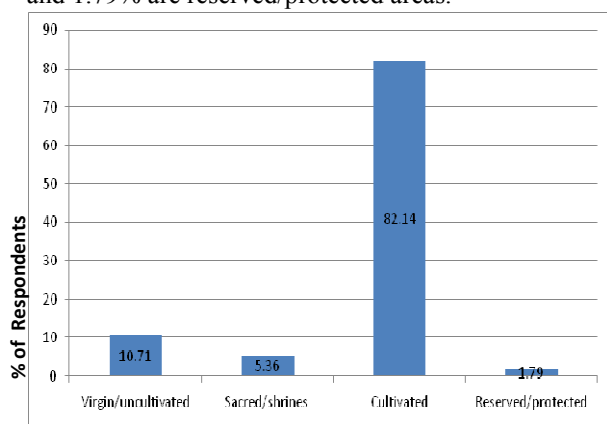
Table 5: Predominantly produced Agricultural products
The table below shows list of predominantly agricultural products in the three sampled rural communities of Imo State

S/N	Community	Agric Products	Availability
1	Umuagwo	Cassava, pineapples, snails, vegetable, Palm oil, mushroom, yam, plantain, bush meat etc	Seasonal
2	Eziudo	Cassava, vegetable, garden egg, snail, mushroom, palm oil etc	✓
3	Isuochi	Yam, cassava, snail, mushroom, plantain, Palm oil, bush meat etc	✓

Authors field work, 2014.

THE NATURE OF FOREST IN THE STUDY AREA

The nature of forest according to the respondents from the below chart shows that 82.14% is cultivated, 10.71% is virgin/uncultivated, 5.36% are sacred/shrines and 1.79% are reserved/protected areas.

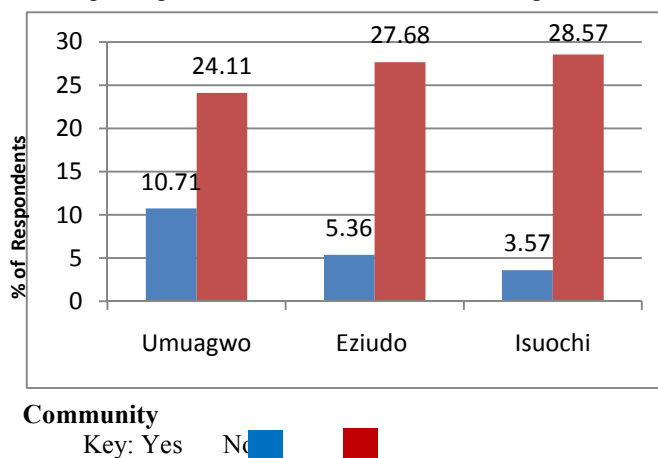


Source: Author's fieldwork, 2014.

Figure 2: Bar chart showing the nature of forest

PARTICIPATION IN SNAIL AND MUSHROOM FARMING

Figure 3 below shows respondent's participation in snail and mushroom farming in the study areas; only 19.64% respondents said they participate in snail and mushroom farming while a staggering 80.37% said they do not participate in snail and mushroom farming.

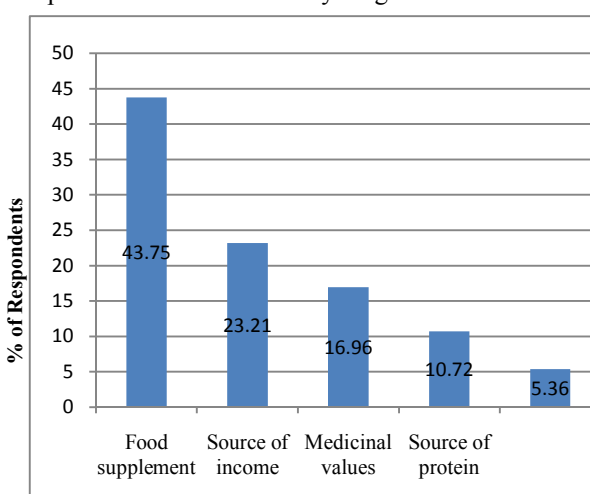


Author's fieldwork, 2014.

Figure 3: Multiple bar chart showing participation in Snail and Mushroom farming

Benefits of Snail and Mushroom farming

Findings from the field shows respondents perception of the benefits of Snail and Mushroom farming; 43.75% says it's for food supplement, 23.21% as source of income, 16.96% for medicinal values, 10.72% as source of protein and 5.36% for recycling of waste matter.



Author's fieldwork, 2014.

Figure 4: Graph Showing Benefit of Snail and Mushroom Farming in the study area

DISCUSSION AND CONCLUSION

From the findings of this research work, the following were reached; Snail and Mushroom farming is poorly practiced in the area of study. People engage more in exploitation of forest products while little attention is paid to Non-Timber Forest Products (NTFP) like snail and mushroom that are cheaper and environmental friendly. This is the reason for the high environmental degradation in the study area and in line with the assertion by NCF, 2000 (see page 2). There is a lot of ignorance as most farmers do not know the nutritional, medicinal and money spinning impact of this all important Non-Timber Forest Products (NTFP). There also abound potentials for farming of Snail and Mushroom in the study area. Capacity building strategies such as the ones recommended here will boost food security, source of revenue and good health for the study area in particular and the country at large.

There should be organization of talk shows on Television and Radios on the positive potentials of Snail and Mushroom farming. The government through her organs like the ministry of Agriculture should produce monthly newsletter, seminars and workshops. This will help to increase the awareness of the nutritional and medicinal benefits and reducing every cultural bias associated with Snail and Mushroom farming. Government on her own part should train more Snail and Mushroom scientist, set up a Regional or National centre for research in Non Forest Timber products (NTFP) like Snail and Mushroom where rural farmers can be trained. Attention of the farmers can then be shifted from the too much dependence on forest timber products which had degraded the environment to non forest timber products that helps to conserve and sustains the only one Environment.

REFERENCES

- Abere, S.A. and Lameed, G.A. (2008), The medicinal utilization of snails in some selected states in Nigeria. In Onyekwelu, J.C. Adekunle, V.A.J. and Oke D.O. (eds) proceedings of the first National Conference of the forests and forest product society (FFPS) held in Akure, Ondo state between 11th – 18th April, 2008. pp. 233-237.
- Ademosun, A.A. and Omidiji, M.O. (1999). The nutrient value of African giant land snail (*Archachatina marginata*) journal of Animal protection Research 8 (2): 876 – 877.
- Akinnusi, O. (1998). Introduction to snail farming. Omega publishers, Lagos.
- Akintomide, I.A. (2004). Tropical snail farming Oak ventures publishers, Lagos.
- Akpaja, E.O., Okhuoya, J.A. and Eliwer Heferere, B.A. (2005). Ethnomycology and indigenous uses of mushrooms among the Bini-speaking people of Nigeria. A case study of Aihuobabekun community near Benin City; Nigeria. International Journal of medicinal mushroom 7(3): 373-374.
- Alabi, R.O (1991). Mycology and Nigerian culture: past present and future. Proceedings of 1st conference on African mycology: Mauritius, June 10-15, 1990. pp. 43-52.
- Aletor, V.A. and Aladetimi, O.O. (1995) compositional studies on edible tropical species of mushrooms. Food chemistry 54:265-268.
- Anamayi, S.E., Anamayi, R.M., Okeke, E.N. Adams, B.A. and Aderounmu, E.A. (2005). Marketing of edible land snail (*Archachatina Marginata*) in Ibadan. In: popoola, L., Mfon, P. and Oni, P.I. (eds) proceedings of the 30th Annual Conference of FAN held in Kaduna state between 7th-11th Nov 2005 pp. 598-605.
- Boa F. (2004), Wild edible fungi: A global overview of their use and importance to people. FAO press, pp. 37-78.
- Elimsile, L.J. (1982). Snail and snail farming. World Animal Review 4.20-26.
- Hossain M.S. Alam N., Amin S.M.R., Basunia M.A. and Rahman A. (2007). Essential fatty acid contents of *pleurotus ostreatus*, *Ganoderma Lucidum* and *Agaricus bisporus*. Bang J. mushroom 1:1-7.
- Ibe C.C., C.N. Osuji, T.O. Akunna, E.O. Ahaotu and E.U. Nwabueze (2013) proximate composition and Antioxidant Activity of Eleven selected wild Edible Nigerian Mushrooms. International Journal of Agriculture and Biosciences. Vol. 2 (5): 181-184 www.ijagbio.com
- Ilori, M.O. Fasida, I.O and Isikhuemben O.S. (1997). Mushroom research and commercial cultivation in Nigeria. Food Review International. Vol. 13, Issue 3. www.tandfonline.com
- Imo ADP (1990) work programme, Imo ADP, Owerri Nigeria/Imo ministry of land, survey and urban planning (ISMLSUP) (1999). Area of Imo state by Local Government.
- ISMLSUP (1999), Area of Imo State by Local Government. Imo ministry of land, survey and urban planning.

Jumpponen, A. Claridge, W.A. Trappe, M.J. Label, T. and Claridge, I.D. (2004). Ecological Relationships among hypogenous fungi and trees: Inferences from association analysis integrated with habitat modeling. *Mycologia* 96(3): 510-525.

Longvah, T. and Y.G. Deosthale, 1998), compositional and nutritional studies on edible wild mushroom from northeast India. *Food chem.*, 63:331-334.

Nigerian Conservation Foundation (NCF) (2000). Documentation of Environmental Degradation in Fifteen Communities in Akwa Ibom State. UNDP, Lagos 185-89.

Obodai M., J. Cleland-Okine and KA Vowotor, (2003) comparative study on the growth and yield of *pleurotus* *Ostreatus* mushroom on different Lignocellulosic by-products. *J. Industrial microbiology Biotechnology*, 30: 146-149.

Ogbeide, O.C. (1968). Nutritional hazards of food, taboos and preference in Midwest Nigeria. *American Journal of Nutrition*. 27:213-216.

Okhuoya et al., (2010) Nigerian Mushrooms: Under utilized Non-wood Forest Resources. *Journal of applied science and environmental management*. Vol. 4 (1) 43-54 www.bioline.org.br/ja

Wosu, I. O. (2003). Commercial snail farming in West Africa a guide. AP Express Publisher Ltd Nsukka.

Yongabi, K. Agho, M. and Martinez – Carrera, D. (2004). Ethnomycological studies on wild mushrooms in Cameroon, central Africa. *Micologia Aplicada International* 16: 234-36.