

Contribution of Mushroom Production to Rural Income Generation in Oyo State, Nigeria

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Abstract

The study examined the economics of mushroom production in Oyo State. Data for the study were obtained from Ido, Surulere Local Government Area and Akinyele Local Government Area. A total of 202 respondents were selected for the study area. The data were analysed using descriptive statistics and costs-returns analysis. The result shows that majority (71.7%) of mushroom farmers are within 31 - 50 years of age. Majority (67%) of the farmers was male and married (79.2%). Furthermore, about all (95.0%) of the farmers had <1-5 years of experience in mushroom production. The costs-returns analysis revealed that mushroom production is a profitable venture. Profitability indices indicate that for every ₦1 of sales made, 32kobo profit is realized (ROS). RRI values shows that every ₦1 invested in mushroom production yields 49kobo in returns and every ₦1 spent on variable cost leads to 79kobo gain for the farmer. These results clearly show that mushroom production is profitable in all ramifications and should therefore be encouraged and financially supported for large scale production. The study therefore recommends articulation of sound policy by government to cater for financial inclusion and export oriented markets for mushroom. This will drive employment creation, poverty alleviation and increase in foreign earnings for the country.

Keywords: Economics, Mushroom, Net farm income, Profitability, Oyo State

INTRODUCTION

Non-timber forest products (NTFPs) are naturally occurring resources other than timber that are utilized by humans to meet various needs. They include nuts, berries, mushrooms, fruits, oils, and medicinal plants that are relevant for both rural and urban dwellers Ahenkan and Boon, (2008). Globally, NTFPs have emerged as a major instrument for promoting sustainable forest-based livelihoods and forest communities (Marshall et al., 2003; UNDP 2004). NTFPs can significantly enhance the livelihoods of forest dependent communities through provision of household food security and nutrition (Belcher et al., 2005; Marshall et al., 2005; Ros-Tonen and Wiersum, 2005; FAO, 2006; Ahenkan and Boon, 2008; 2010). Harriet et al. (2017) identified mushroom as a major NTFP that contributed to livelihoods and provides access to food and income generation. In addition, NTFPs can generate additional employment and income, offer opportunities for forests-based enterprises and can contribute to international trade and development amongst others (Marshall et al., 2003). However, unsustainable extraction of forest products and the likelihood of consuming toxic mushroom had led to the promotion of home grown mushroom. Mushrooms,

locally known as “osu” or “ero nsu” in Ibo, “katala” or “rumbagada” in Hausa and “Olu” in Yoruba, are edible NTFPs in Nigeria. This fleshy fungus has a distinct umbrella-shaped cap borne on a stalk and naturally grows in the forests (Ahmed and Syed, 2008).

In Africa, where food insecurity and malnutrition exist, mushrooms owing to their flavor, nutritional value and ease of production have been identified as a valuable food source that can contribute to alleviating malnutrition and hunger as well as to the economy (Eswaran and Ramabadrán, 2000). Mushrooms are important for their high levels (21% - 40%) of protein, Vitamins (B1, B2, B6, B12, C and D) and essential minerals that are relevant to human health in Africa (Atipko et al., 2006). Mushrooms are quite easy to produce and are widely recognized for the nutritional and medicinal benefits and Edible mushrooms contribute to commercial trade for many agro and forests-based enterprise (Guillamón et al, 2010).

Nigeria with her unique climatic conditions of tropical rain forest in Sub-saharan Africa, is a hot spot for diverse species of mushrooms. Although, there are about 140000 species of mushrooms, very few (about 10%) of these are known (Hawksworth, 2001). In the past, mushrooms were collected traditionally from decayed wood materials in the forests. However, with increasing urbanization and the resulting forest loss and forest degradation, domestication of mushrooms for both commercial and subsistence uses in rural and urban areas have become paramount (Odediran *et al*, 2015). It is however imperative that cost and return associated with mushroom production be examined. This is considered important so as to develop and formulate sound economic encouragement for mushroom production.

METHODOLOGY

This study was carried out in selected local governments (LGA) of Oyo State, Nigeria. These are Ido, Akinyele and Surulere. These LGA were chosen because they are largely rural and peri urban. They therefore retain significant primary and secondary forest estates which can provide the climate and ecosystem suitable mushroom production. Akinyele Local Government Area is one of the six rural and peri urban LGA of Ibadan metropolis and it is located between Latitude 7° 25' 0" N, Longitude 30 39' 4" E and Latitude 7° 42' 39" N, Longitude 40° 7' 0" E. The LGA is about 464.892 square kilometer, with a population density of 516 people per square kilometer and has about 797 localities. It has a total population of 211,359 comprising 105,633 males and 10,726 females and 12 political wards (NPC, 2006). Surulere LGA has headquarters in Iresa-Adu. It is located between longitude 4 and latitude 8° with estimated area of 23 km² and a population of 142,070. The third LGA is Ido. It lies between longitude 3° 47' 34.99" E and latitude 7° 30' 44.49" N with a total population of 103,261. Primary occupations in all these areas are farming and hunting. Major crops planted include cassava, maize and vegetables with many people also engaging in mushroom and livestock production.

Two stage sampling procedure was used to select 202 farmers used for this study. The first stage involved the purposive selection of three (3) Research Institutes in Oyo State where training on mushroom production is prevalent. These include Forestry Research Institute of Nigeria (FRIN) for trainees from Ido LGA; National Horticultural Research Institute (NIHORT) for Akinyele LGA and National Bio-technology Development Agency (NABDA) for Surulere LGA. The second stage involved the purposive selection of 50% of the mushroom farmers trained in these

institutes. Mushroom production is just beginning to gain popularity. As such, farmers involved in its production are not randomly or commonly available. This study therefore relied on trainee register provided by these institutes. A total of 205 questionnaires were administered but only 202 (99% response rate) were used for analysis due to incomplete or non-coherent responses. Descriptive; cost -return analysis were employed in data analysis. Costs-returns analysis was used to ascertain the profitability of mushroom farming. Net farm income and profitability ratios are as follow:

$$\begin{aligned} \text{NFI} &= \text{TR} - (\text{TFC} + \text{TVC}) && 1 \\ \text{ROS} &= \frac{\text{NFI}}{\text{TR}} \times 100 && 2 \\ \text{RRI} &= \frac{\text{NFI}}{\text{TC}} \times 100 && 3 \\ \text{RRVC} &= \frac{\text{TR} - \text{TC}}{\text{TVC}} \times 100 && 4 \end{aligned}$$

Where:

NFI = Net farm income, TR = Total revenue, TFC = Total fixed cost, TVC = Total variable cost
 TC = Total Cost, ROS= Return on Sales, RRI= Rate of Return on Investment, RRVC = Rate of Return on Variable Cost

RESULTS AND DISCUSSION

The mean age of the respondents was 40 years (±8.65) with majority (71.7%) of the respondents within 31 - 50 years. Only few (13%) respondents were above 50 years. This showed that most of the mushroom farmers were in their active and productive age. They will therefore possess the energy required for mushroom production even if involved in another agricultural activity. This age bracket is usually receptive of technology and could benefit from marketing and packaging requirements that are needful for sales. This finding therefore suggests that mushroom production can be used to improve economy in this area as Belcher et al. (2005), Marshall et al. (2005), Ros-Tonen and Wiersum (2005) opined that mushroom production can improve livelihood where youths are actively involved. Majority (67.3%) of mushroom farmers were male while (32.7%) were female. This is in agreement with Kayode *et al.*, (2015) that male dominated mushroom production.

Mushroom farmers are mostly (79%) married implying household involvement in production and or utilization of mushroom gains. Hawksworth (2001), Odediran *et al*, (2015) and Mabuza *et al.*, (2012) submitted that the married dominated mushroom production and this can help in decision making and supply of family labour needed for production. The table further revealed majority (81.2%) of the farmers has a household size of 1-5. A typical mushroom famer has four (4.13±1.60) individuals in his family. It can be said that at least four people are involved in production, consumption and spending of income from mushroom per family. Religious affiliation of the farmers shows that the two dominant religions in the country are found among the farmers. This implies that both Christians (59.9%) and Muslims (40.1%) were involved in mushroom. So there is no religious barrier with mushroom production or consumption. The table further shows that majority (95%) of the respondents had 1-5 year experiences in mushroom production, implying that mushroom production is just beginning to gain popularity. This result concur with

Gebretsadkan (2015) who found out that about 85.5% of mushroom producers in Ethiopia had less than 5 years experience in mushroom production.

Table 1: Socio Economic characteristics of Mushroom Farmers in Oyo State

Socioeconomic characteristics	Frequency	Percentage (%)	Mean (\pmSD)
Age			
<30	24	11.9	40.78 \pm 8.65
31-40	75	37.1	
41-50	78	38.6	
>51	25	13.4	
Gender			
Male	136	67.3	
Female	66	32.7	
Marital status			
Single	25	12.4	
Married	160	79.2	
Widow	8	4.0	
Household size			
<1-5	192	95.0	4.13 \pm 1.60
6 and above	10	5.0	
Religion			
Christianity	121	59.9	
Islam	81	40.1	
Total	202	100.0	

Sources of capital for mushroom production

Sources of capital for mushroom production are presented in Figure 1. Result from figure 1 revealed that majority (64%) of the farmers used personal saving for mushroom production. This indicates limitation on volume of mushroom produced as investment into mushroom farming cannot be beyond what they are able to save. Another implication of this result may be the inability of the farmers to access loan for mushroom production. Therefore financial support needed for buying input, labor, improving cultivation technique and postharvest care (Gebretsadkan, 2015) is not available. Also the result of RUAF Foundation (2007) revealed that there is no proper policy which supports mushroom farming. Mushroom production is side-lined financially from financial programmes which are given to other crops such as maize.

Sales outlet for mushroom

Sales outlet and markets for mushroom is shown on Figure 2. The result showed that neighborhood (26%), religious gatherings (22.3%), and hotels (20.8%) were the three most common sales outlets for mushroom. The results therefore show that there are a number of sales outlets and markets for mushroom as ready markets are very important for perishables like mushroom (Marshall and Nair, 2009). Apetorgbor, *et al* (2005) and Shahi, *et al* (2018) had earlier observed that mushrooms were sold majorly in area market and the above results lend credence to this assertion.

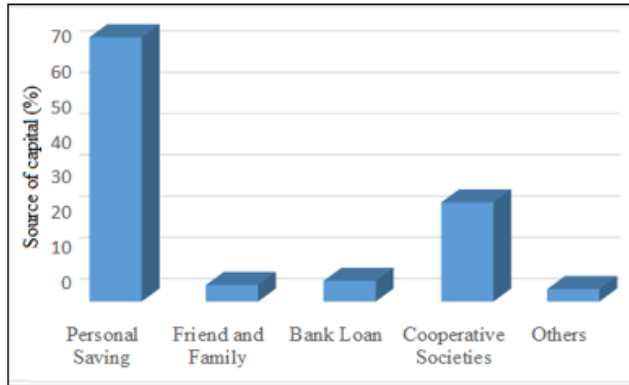


Figure 1: Source of capital for mushroom production

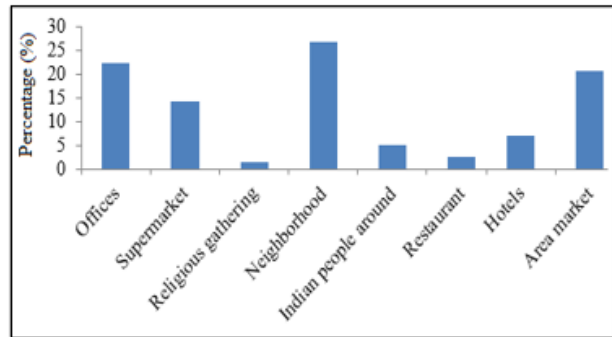


Figure 2: Outlets for the sales of mushroom

Monthly Income from mushroom production

Monthly income from mushroom production is presented in Figure 3a. The result shows that (21.3%) of the respondents were getting $\leq \text{₦}5000$ as monthly income from mushroom production; (26.7%), were getting between $\text{₦}31000$ and $\text{₦}40000$, while only 2.5% were getting above $\text{₦}51000$ as monthly income from mushroom production. This implies that mushroom production can be regarded as a substantial income generating source for rural households.

Scale of mushroom production

Results from figure 3b showed that majority (81.7%) of the respondents in the study area were practicing small scale mushroom production. The high percentage in small scale mushroom production implies that majority of the mushroom producers may not have the necessary financial support to scale up their production to medium / large scale. This could be due to the fact that mushroom farmers in the study areas lack access to financial facilities for expanding their production and invest in new technology for mushroom production. This confirms the result of Gabretsadkan (2015) which revealed that farmers need financial support to grow their businesses and little profits cannot be reinvested to make a big project without assistance.

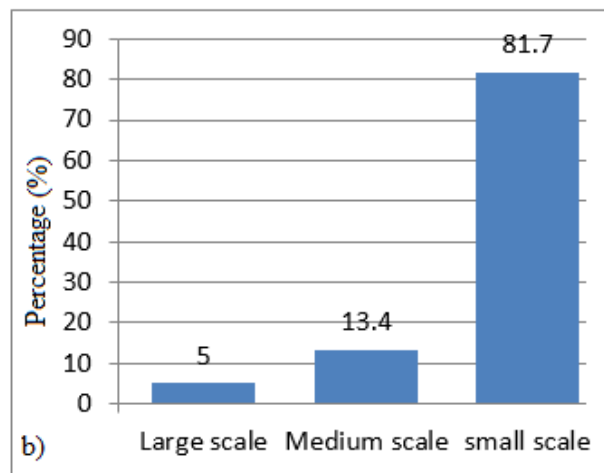
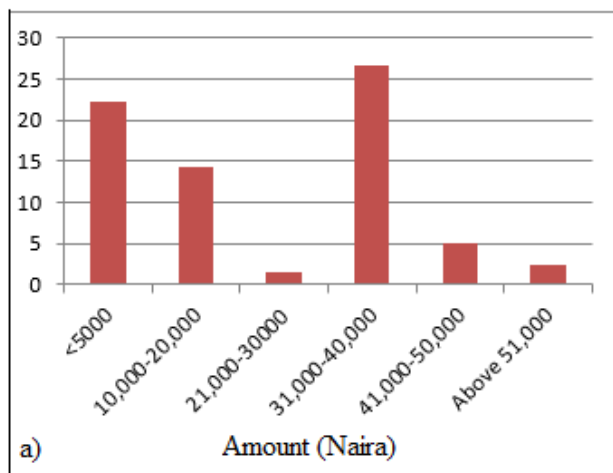


Figure 3: a) monthly income from mushroom production, b) Scale of mushroom production

Cost and returns to mushroom production

Table 2 shows the cost and returns associated with small scale mushroom production per year. Total revenue was ₦ 906,326.00 and a gross margin of ₦ 531,326 and a net farm income was ₦ 4,326. Profitability indexes indicate that for every ₦1 of sales made, 32kobo profit is realized (ROS). RRI values shows that every ₦1 invested in mushroom production yields 49kobo in returns and every ₦1 spent on variable cost leads to 79 kobo gain for the farmer. These results clearly show that mushroom production is profitable in all ramifications and should therefore be encouraged and financially supported for large scale production.

Table 2: Cost and Returns of Mushroom Production per year

Items	Amount (₦)
Total Revenue	906,326.00
Variable Cost	
Labour	90,000
Wheat Bran	140,000
Methylated Spirit	4,000
Sorghum	12,000
Lime (Calcium Carbonate Caco3)	42,000
Rubber Band	8,000
Foil Paper	25,000
Cotton Wool	4,000
Spawn	50,000
	375,000
Total Variable Cost	
Gross Margin	531,326
Fixed Cost	
Drum	50,000
Knapsack Sprayer	86,000
Tripod Stand	7,000
Mushroom House	300,000
Table	8,000
Gas Cylinder	14,000
Weighing Scale	80,000
Shovel	7,000
	466,000
Total Fixed Cost	
Depreciated fixed cost for two years using straight line method	233,000
NFI	298,326
Profitability Ratios	
ROS	32%
RRI	49%
RRVC	80%

CONCLUSION

This study concludes that mushroom production is mainly done by economically active population with readily available local markets. It is a profitable enterprise with potential to improve the income of rural households in the study area if adequate financial support is given to the producers

to expand the scale of production scale suitable for both domestic and export markets. It is therefore recommended that mushroom farmers in the study area should be supported to form cooperative societies that will enable them access adequate credit facilities from financial institutions. This will enhance their ability to acquire sufficient equipment and facility that will increase their production output to large scale production as well as create employment opportunity and provide solution to the nation food insecurity. Finally, sound policy by government to cater for financial inclusion and export oriented markets for mushroom should be designed and implemented. This will drive employment creation, poverty alleviation and increase in foreign earnings for the country.

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