



ASSESSMENT OF THE CONTRIBUTION OF MUSHROOM PRODUCTION ON THE LIVELIHOOD OF FARMERS IN OYO STATE, NIGERIA

*¹Odediran F. A., ²Adekunle O. A.,¹ Adesope A. A. A., ¹Ojedokun C. A. and ¹Ogunsola, A. J.

¹ Department of Forest Economics and Extension Services, Forestry Research Institute of Nigeria, PMB 5054 Jericho Hill Ibadan, Oyo State

² Departments of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Ilorin, Ilorin Nigeria

*Corresponding author: festusabiiodun14@gmail.com; +2348137306242

ABSTRACT

The study was carried out to investigate the contributions of mushroom production on the livelihood of farmers in Oyo State. The study was carried out in Ido LGA, Surulere LGA and Akinyele LGA to investigate the contributions of mushroom production on the livelihood of farmers in Oyo State. A total of 202 respondents were selected using Multi – stage sampling design. Data were collected using a set of questionnaire analysis of the data obtained from the questionnaire was carried out through the use of 5 likert scale, descriptive and regression analysis were used for data analysis. The result shows that majority (83.2%) of the respondents affirmed that cultivation of mushroom can improve farmers' livelihood, majority (74.3%) of the respondents did not agree that engaging in mushroom production will likely take most of their time. The perceived benefits derived from mushroom shows that strong bone formation was ranked 1st while increase in income ranked 6th. Regression analysis reveals that age (1%), marital status (1%), educational qualification (5%), other source of income (5%), years of experience (1%), and species of mushroom (1%), were all significant.

Keywords: Assessment, contribution, mushroom production, livelihood

INTRODUCTION

Small-scale farmers often find themselves at a major disadvantage compared to larger and better-endowed commercial farmers who have better access to information, services and capital, and can afford to produce large volumes of quality products demanded by the market (Poulton *et al.*, 2006). In an attempt to overcome such challenges, most developing countries are promoting collective action through formulating farmer organizations as a key intervention to enhance small-scale farmers' access to markets Zhang *et al.*, (2014). Forest contributes to all aspects of rural life, providing food, fodder, fuel, building materials and household items. Mushrooms are used as food and it has greater importance in human diets worldwide than

ever before. Edible mushrooms are considered as healthy food because their mineral contents are higher than that of meat or fish and most vegetables (Ahenkan, 2010).

The current rate of bush burning, deforestation and over-exploitation of timber and non-timber forest products, are greatly threatening the availability of mushrooms in Nigeria. The introduction of the National Mushroom Development Project in 1990 (Sawyer, 2000) to produce exotic mushrooms such as *Pleurotus* species brought about small scale mushroom farms mostly for the urban unemployed while technologies developed for the straw mushroom.

Mushrooms have a wide array of medicinally important compounds that have anticancer and antiviral activity; offering great hope for the production of new drugs for ailments like HIV/AIDS, Avian influenza and the many cancers that afflict humanity today (Kidukuli *et al.*, 2010). Wild edible fungi are an important source of income for communities and national economies, and are especially valuable to rural people in the developing countries (Boa, 2004).

The significance of wild edible fungi lies with their extensive subsistence uses in developing countries, although this is an area where there are still significant gaps in information (Boa, 2004) One of the important reasons why the commercial production of mushroom should be given attention is its ability to grow on agricultural and industrial wastes which can be recycled into food while also making the environment less endangered by pollution (Odediran *et al.*, 2017). Therefore, this study was carried out to reveal the correlation between some selected socio-economic characteristics and mushroom production, determine the farmers' perception on mushroom production and examine the benefits derived from mushroom production by farmers

MATERIALS AND METHODS

Study Area

The study was carried out in Akinyele LGA, Surulere LGA and Ido LGA of Oyo state,

Southwest, Nigeria. Akinyele Local Government Area is one of the 6 peri urban and rural Local Government Areas of Ibadan metropolis and it is located between Latitude $7^{\circ} 25' 0''$ N, Longitude $30^{\circ} 39' 4''$ E and Latitude $7^{\circ} 42' 39''$ N, Longitude $40^{\circ} 7' 0''$ E. Akinyele Local Government land area is about 464.892 square kilometer, with a population density of 516 person per square kilometer and has about 797 localities with a total population of 211,359 comprising 105,633 males and 10,726 females and 12 political wards according to the National Population Census conducted in 2006, Surulere is a Local Government Area in Oyo State, Nigeria. Its headquarters is in the town of Iresa-Adu, it locate between the longitude 4 and latitude 8° . It has an area of 23 km² and a population of 142,070 at the 2006 census and Ido local government area consists of the total population of 103,261 according to the 2006 population census . It lies between longitude $3^{\circ} 47' 34.99''$ E and latitude $7^{\circ} 30' 44.49''$ N. The main primary occupations in all study the area are farming and hunting. Major crops planted include mushroom farming, yam, cassava, cowpea and vegetables with many people also engaging in livestock production.

Population of the study

A total of 205 respondents were purposively selected for this study. The population comprised of mushroom farmers in the selected Local Government Areas in Oyo State, Nigeria.

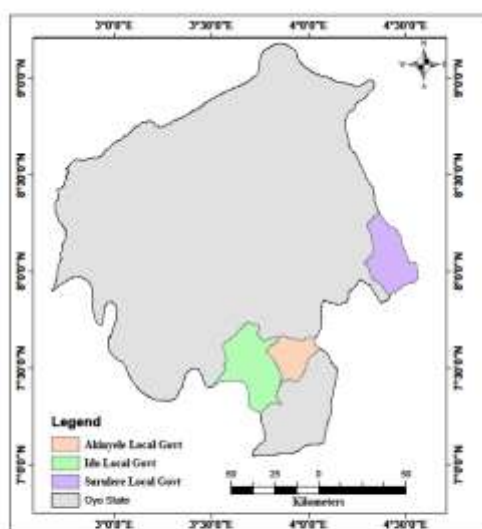


Figure 1: Map of Oyo state showing the study areas

Sampling procedure and sample size

Multistage sampling procedure was used for the selection of the respondents in this study. The first stage involved the purposive selection of three (3) Research Institutes in Oyo State where training on mushroom production was prevalent (Table 1). The Institutes were: Forestry Research Institute of Nigeria (FRIN) comprising of the trainees in Ido Local Government Area (LGA); National Horticultural Research Institute (NIHORT)

comprising of the trainees in Akinyele LGA and National Bio-technology Development Agency (NABDA) in Ogbomoso comprising of the trainees in Surulere LGA. The second stage involved the purposive selection of 50% of the mushroom farmers trained in these institutes. Overall, 205 respondents were selected and administered questionnaires. However, 202 (99% response rate) of the questionnaire were retrieved from the field and were coded for the analysis.

Table 1: Sampled respondents and the Administration of questionnaire for the study

Selected research institutes	Local Government Area	Total number of mushroom farmers in each institute	50% of selected farmers
FRIN	Ido	180	90
NIHORT	Akinyele	180	90
NABDA	Surulere	50	25
TOTAL		410	205

Data Analysis

Statistical tools such as descriptive analysis and chi-square were used for the study.

RESULTS

Perception of farmers on mushroom production

The result in Table 2 revealed the perception of farmers on mushroom production. Majority (83%) of the respondents affirmed that mushroom production can improve farmers' livelihood, (59%) of the respondents also affirmed that mushroom cultivation has improved farmers' social status,

(72%) of the respondents agreed that cultivation of mushroom as secondary occupation will increase farmers' source of income, (74.8%) of the respondent stated that mushroom farming is a good business while 63 % of the respondent did not affirmed that mushroom cultivation will affect their primary occupation, (74%) of the respondent did not agree that engaging in mushroom production will likely take most of their time and (47%) of the respondent did not agree that mushroom farming is not as profitable as other farming system.

Table 2: Farmers' Perception of effect of Mushroom Production on livelihood

Items	F(%)SA	F(%)A	F(%)U	F(%)D	F(%)SD	Mean(\pm SD)	Remarks
Cultivation of mushroom can improve one's livelihood	168 (83.2)	28 (13.9)	1 (0.5)	5 (2.5)	0 (0.0)	3.22 \pm 0.58	Affirmed
I am not likely to cultivate mushroom because it will affect my primary occupation	6 (3.0)	8 (4.0)	4 (2.0)	128 (63.4)	56 (27.7)	2.09 \pm 0.85	Not Affirmed
Profitability of mushroom production can improve one's social status	73 (36.1)	121 (59.9)	3 (1.5)	5 (2.5)	0 (0.0)	3.70 \pm 0.62	Affirmed
Engaging in mushroom production will likely take most of your time	7 (3.5)	15 (7.4)	9 (4.5)	150 (74.3)	21 (10.4)	2.81 \pm 0.83	Not Affirmed
Cultivation mushroom as secondary occupation will increase one's source of income	147 (72.8)	51 (25.2)	1 (0.5)	5 (1.5)	0 (0.0)	3.31 \pm 0.56	Affirmed
Mushroom farming is a good business compare to others	33 (16.3)	151 (74.8)	13 (6.4)	5 (2.5)	0 (0.0)	3.95 \pm 0.75	Affirmed
Mushroom farming is not as profitable as other farming system	5 (2.5)	16 (7.9)	27 (13.4)	95 (47.0)	59 (29.2)	1.93 \pm 0.98	Not Affirmed

Figures in parentheses are percentages

SD = Standard Deviation; SA= Strongly Agree; A= Agree; U= Undecided; D= Disagree and SD= Strongly Disagree

Perceived Benefits of Mushroom Production to farmers in Oyo State

The result of Table 3 revealed that there are benefits accrued to farmers from mushroom production in the study area. Using mean score to rank the benefits of mushroom according to their order of need as indicate by the respondents, strong bone formation was highest (1.06 \pm 0.25) as benefit derived from mushroom production by the respondent ranked 1st; food/ vegetable substitute ranked 2nd (1.05 \pm 0.23) ; high minerals contents and meat substitute ranked 3rd (1.04 \pm 0.20); reduction of diseases, reduction of risk of diabetes, and improved production quality ranked 4th (1.02 \pm 0.14), better health status, and high dietary fiber ranked 5th (1.01 \pm 0.10) while improvement of income ranked 6th (1.00 \pm 0.00).

Correlation between some selected socio-economic characteristics and mushroom production

The result of the Pearson Moment Correlation analysis (Table 4) showed that age ($r = -0.293$, $p=0.000$), marital status ($r=-0.207$, $p=0.003$), household size ($r=-0.222$, $p=0.002$ and source of labor ($r=- 0.198$, $p=0.005$) though significant (1%) were negatively correlated with mushroom production. This shows that larger household size and higher number of people in their productive age would increase mushroom production..However, educational qualification ($r=0.174$, $p=0.013$), other source of income ($r=0.176$, $p=0.012$) and species of mushroom ($r=0.256$, $p=0.000$), were significant (1%) and positively related to mushroom production. This implies that quality education for farmers, better sources of income for farmers and quality species tend to improve mushroom production.

Table 3: Benefits Derived from Mushroom Production by Farmers

Perceived Benefits of mushroom to farmers	YES F(%)	NO F(%)	Mean(\pm SD)	Ranking
Strong bone formation	189 (93.6)	13 (6.4)	1.06 \pm 0.25	1 st
Food/vegetable substitute	191 (94.6)	11 (5.4)	1.05 \pm 0.23	2 nd
High mineral content	194 (96.0)	8 (4.0)	1.04 \pm 0.20	3 rd
Meat substitute	194 (96.0)	8 (4.0)	1.04 \pm 0.20	3 rd
Reduce health diseases	198 (98.0)	4 (2.0)	1.02 \pm 0.14	4 th
Reduce the risk of diabetes	198 (94.0)	4 (2.0)	1.02 \pm 0.14	4 th
Improved production quality	196 (97.0)	6 (3.0)	1.02 \pm 0.17	4 th
Better health status	200 (99.0)	2 (1.0)	1.01 \pm 0.10	5 th
High dietary fibre	200 (99.0)	2 (1.0)	1.01 \pm 0.10	5 th
Increased income	202(100.0)	0(0.0)	1.00 \pm 0.00	6 th

Figures in parentheses are percentages; SD = Standard Deviation

Table 4: Correlation between some selected socio-economic characteristics and mushroom production

Variables	r-value	p-value	Decision
Age	0.293**	0.000	Significant
Gender	0.101	0.152	Not Significant
Marital status	0.207**	0.003	Significant
Educational qualification	0.174*	0.013	Significant
Household size	0.222**	0.002	Significant
Year of experience	0.314**	0.000	Significant
Other source of income	0.176*	0.012	Significant
Source of labour	0.198**	0.005	Significant
Farmer's group	0.033	0.646	Not Significant
Source of capital	0.024	0.738	Not Significant
Species of mushroom	0.256**	0.000	Significant

**correlation is significant at 1%; * correlation is significant at 5%

DISCUSSION

The result show that Majority (83%) of the respondents were affirmed that mushroom production can improve one's livelihood. This result shows that mushroom production is a means of livelihood for the farmers in the study areas which may be due to the fact that farmers in the study area were generate money/income from mushroom production which they may be use it to cater for their family. This implies that farmers can be generating income from mushroom production which could be use for their livelihood. This confirms with the findings of Eswaran and Ramabadrnan (2000), Mabuza and Wale (2012), Shahi, *et al.*, (2018) who they all observed that mushroom contribute to increase in farmers' source of income and increase farmers livelihood.

The result on benefit derived from the mushroom production shows that mushroom farmers were

benefit vegetable substitute and meat substitute from the mushroom production. This could be due to the fact that mushroom were so rich in nutrient content that meat and vegetable can provide to human diet. This implies that mushroom can contribute to the human nutrition. This is in agreement with Oyedele, *et al.*, (2018) who affirmed that mushroom production can contribute significantly to household food and nutrition. The value of the Pearson Moment Correlation analysis showed that age were significant at 1%. This result which shows that age of the farmers were significant in mushroom production in the study area which may due to the fact that farmers in the mushroom production were in their active age and have capacity to produce more production. This finding is in supported by Zhang, *et al.*, (2014), who

discovered that farmers within the middle age and mature have capacity of producing more in mushroom production. The result of household size of the farmers was significant at (1%). This could be due to the fact that farmers were using their family members in mushroom production. This shows that larger household size influence in mushroom production in the study areas. This result in inline with the study of Dhanushkodi, *et al.*, (2017) who discovered that age household size influenced mushroom production.

However, educational qualification and better source of income were significant at (5%). This may be due to the fact that education qualification and better source of income might be the way out for farmers to solve their problems encounter during the mushroom production in the study areas. This implied that quality education for farmers and better sources of income tend to improve mushroom production. This is in line with Mahbuba *et al.*, 2012, Odediran *et al.*, 2015 result which they all support that source of income and education quality tend to improve mushroom production.

REFERENCES

- Ahenkan, A., and Boon, E. (2010). Commercialization of non-timber forest products in Ghana: Processing, packaging and marketing. *Journal of Food, Agriculture and Environment*, 8: 962–969.
- Boa, E. R., (2004). Wild edible fungi: a global overview of their use and importance to people. Food & Agriculture Org., Rome pp 55-62
- Dhanushkodi V, Padmadevi K, Amuthaselvi and Ravi M (2017). Contribution of Integrated Farming System for Livelihood Security of Tribal's in Pachamalai Hill of Tiruchirappalli District. *Asian Journal of Agricultural Extension, Economics and Sociology* 21(4): 1-5
- Eswaran A, and Ramabadran R (2000). Studies on some physiological, cultural and post harvest aspects of Oyster mushroom, *Pleurotus ostreatus*. *Tropical Agriculture Resources*. 12:360-374
- Kidukuli A.W, Zakaria H. Mbwambo, Hamisi M. Malebo, Clarence A. Mgina1 , Matobola J. and Mihale (2010). In vivo activities,

CONCLUSION AND RECOMMENDATIONS

The study was carried out to investigate the assessment of the contribution of mushroom production on the livelihood of farmers in Oyo state, Nigeria. The findings shows that majority the respondents agreed that mushroom production can improve farmers' livelihood and the cultivation of mushroom as secondary occupation will increase farmers' source of income. The perceived benefits derived from mushroom production in the Oyo State shows that mushroom served as improvement of strong bone formation, substitute for meat and reduction of diseases.

Base on the study of findings, it was recommended that there is a need to provide more good species of mushroom that can lead to increase in quantity and demand of mushroom production which will enhance mushroom production in the study area. This will help to reduce poverty among the mushroom farmers and improving farmer's livelihood and provide more employment opportunities.

protease inhibition and brine shrimp lethality of selected Tanzania wild edible mushroom. *Journal of applied biosciences* 31: 1887-1894 ISSN 1997-5902

- Mabuza M.L. Ortmann G.F., and Wale E.Z (2012). Collective action in commercial mushroom production: the role of social capital in the management of informal farmer groups in Swaziland. Selected paper for presentation at the International Association of Agricultural Economists (IAAE) Triennial Conference, Foz do Iquacu, Brazil, 18-24 August, 2012
- Mahbuba M., Shireen T., Sheikh S., Mominul H and Shamsuzzaman K. (2012): Impact of Mushroom Cultivation on Socio-economic Status of Bangladeshi Beneficiaries. National Mushroom Development and Extension Centre, Sobhanbag, Savar, Dhaka. *Bangladesh Bangladesh Journal of Mushroom*. 6(2): 49-55, 2012 (December).
- Odediran, O. F and Ojebiyi, W. G. (2017). Cassava processors' willingness to utilise Cassava peel for mushroom production in Southwest, Nigeria. *International Journal of*

- Agricultural Policy and Research Vol.5 (4), pp. 86-93, April 2017 Available online at <https://www.journalissues.org/IJAPR/>
<https://doi.org/10.15739/IJAPR.17.010>
- Oyedele O.A., Adeosun M. V. and Koyenikan O. O. (2018). Low Cost Production of Mushroom using Agricultural Waste in a Controlled Environment for Economic Advancement. *International Journal of Waste Resources* 8: 329. doi: 10.4172/2252-5211.1000329
- Poulton, C., Kydd J. and A. Dorward. 2006. Overcoming market constraints on pro-poor performance: Lessons from farmer groups in Tanzania. *Food Policy* 34:53–59.
- Sawyer, L.C. (2010). Sclerotium formation on sawdust compost by *Pleurotus tuber-regium*, a medicinal Ghanaian mushroom. Presented at the First International Conference on Mushroom Biology and Mushroom Products, Hong Kong.
- Shahi V., Shahi B., Kumar V., Singh K. and Kumari P.(2018) : Impact study on mushroom cultivation for micro entrepreneurship development and women Empowerment. International Conference on Food Security and Sustainable Agriculture (Thailand on 21-24 December, 2018)
- Zhang Y, Geng W, Shen Y, Wang Y and Dai Y.(2014) : Edible Mushroom Cultivation for Food Security and Rural Development in China: Bio-Innovation, Technological Dissemination and Marketing. *Journal of Open access sustainability* 6, 2961-2973;