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ASSESSMENT OF MUSHROOM PRODUCTION ON INCOME OF HOUSEHOLDS IN UMUAHIA AGRICULTURAL ZONE, ABIA STATE, NIGERIA.

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Abstract
This study examined the engagement in mushroom production on households' income in the Umuahia Agricultural Zone of Abia State, Nigeria. A total of 60 mushroom farmers were purposively and proportionately sampled, and primary data were collected through a structured questionnaire. Descriptive statistics and regression analyses were employed to analyze socio-economic characteristics, engagement in mushroom production, income, and production constraints. Results showed that most farmers were educated (80% with tertiary education), predominantly female (55%), and within the economically active age range (mean age = 35.6 years). Farmers demonstrated moderate engagement across mushroom production activities (grand mean = 3.30), and a large proportion of households (23.3%) produced above 400kg of mushrooms annually, indicating that a significant number of farmers operated at relatively high production levels, reflecting the enterprise's commercial potential. While the majority of the households (40%) earned between ₦1,000 and ₦100,000 annually, indicating that mushroom farming served as a supplementary income source for many households. Key constraints included limited access to quality spawn (mean = 3.42), inadequate skills (3.00), and restricted access to credit (3.35). Multiple regression analysis indicated that household size, income, and extension contact significantly influenced engagement, with the model explaining 51.2% of the variability. Simple linear regression further revealed a significant positive relationship between engagement in mushroom production and income. The study, therefore, concluded that mushroom cultivation offered a viable pathway to improved household income and recommended targeted interventions such as technical training, input support, and improved market access to enhance productivity and profitability.

Keywords: Household, Engagement, Mushroom, Production, Effect, Income,

INTRODUCTION

Mushrooms are macro fungi with visible fruiting bodies, either hypogenous or epigeous, and are harvested by hand (Abdul Rehman Niazi & Aneeqa Ghafoor, 2021). Of over 200 recognized superfood mushroom species globally, only 35 are commercially cultivated, and 10 have achieved industrial-scale production (Kalac, 2013; Aida et al., 2009; Xu et al., 2011; Chang & Wasser, 2017). In Nigeria, mushrooms are appreciated for their nutritional and medicinal value and are harvested both from the wild and cultivated

They are rich in protein, minerals, and vitamins while being low in fat and cholesterol, offering numerous health benefits. Mushroom cultivation can be a source of income, particularly for rural populations, women, and the landless. With appropriate environmental control and the use of agro-waste as substrates, mushroom farming requires little space and investment, making it a viable option for improving livelihoods.

Mushroom farming remains underdeveloped in Nigeria. With an annual production of 300 tons against a demand of 1,200 tons, the supply-demand gap remains high (Tridge, 2025). Constraints include limited technical knowledge, poor access to quality inputs and markets, inadequate extension services, and weak infrastructure. While mushroom farming is increasingly promoted for its income potential,

The specific objectives were to;

- describe the socio-economic characteristics of households,
- ascertain household level of engagement in mushroom production,
- estimate the quantity of mushrooms produced
- estimate income from mushroom production and
- determine challenges faced by households towards mushroom production.

It was hypothesized that there was no significant relationship between the selected socio-economic characteristics of respondents and their level of engagement in mushroom production, there was no significant relationship between the engagement of the farmers in mushroom production and their income.

RESEARCH METHODOLOGY

The study was carried out in the Umuahia Agricultural Zone of Abia State, Nigeria, known for its tropical climate and agrarian economy. A purposive and proportionate sampling technique was adopted to select 60 mushroom farmers from a total of 120 trained farmers. Data were gathered using a structured questionnaire. Descriptive statistics (frequency, mean, percentage) were used to analyze the data. Hypotheses were tested using multiple regression and simple linear regression models.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Households

Table 1 presents the socio-economic characteristics of the respondents and their implications for mushroom production. The predominance of respondents within the 22–31 year-age bracket (45%) suggests substantial youth participation in mushroom farming. This finding is consistent with recent studies (FAO, 2024; World Bank, 2025). The higher proportion of female respondents (55%) confirmed the increasing role of women in mushroom production. Recent studies have identified mushroom cultivation as an attractive enterprise for women because it requires relatively small landholdings, modest start-up capital, and can be integrated with household responsibilities (Akinola et al., 2024).

The high proportion of respondents with tertiary education (80%) indicated a strong human capital base for adopting improved mushroom production technologies and management practices. The predominance of married respondents (51.7%) and moderate household sizes of 5–6 persons (48.3%) suggested the availability of family labour and support systems that can facilitate farm operations and reduce labour costs. Similar findings were reported by Nwankwo et al. (2024), who observed that household labour remains a significant resource for small-scale agricultural enterprises in Nigeria.

The variation in market distance, with some respondents travelling up to 20 km to access markets, highlights persistent market accessibility challenges. Recent studies have shown that long distances to markets increase transportation costs, reduce profitability, and may discourage expansion of agricultural enterprises (International Fund for Agricultural Development [IFAD], 2024). Furthermore, the limited frequency of extension contact, with 53.3% of respondents receiving extension services only once annually, suggested inadequate access to technical support and advisory services. According to recent agricultural development reports, insufficient extension coverage remains a major constraint to technology dissemination and productivity improvement among smallholder farmers in Nigeria (FAO, 2025). Finally, the near-equal distribution of cooperative membership indicated a moderate level of social capital among respondents. Recent evidence demonstrates that participation in farmer groups and cooperatives enhances access to information, credit, inputs, and market opportunities, thereby improving enterprise performance and resilience (World Bank, 2024).

Table 1. Socioeconomic Characteristics of Households

Variables	Frequency	Percentage (%)
Age		
22-31	27	45.00
32-41	17	28.00
42-51	07	11.70
52-61	09	15.00
Total	**60**	**100.00**
Gender		
Male	27	45.00
Female	33	55.00
Total	**60**	**100.00**
Education level		
No formal education	03	5.00
Secondary education	09	15.00
Tertiary	80.00	
Total	**60**	**100.00**
Marital status		
Married	31	51.70
Single	16	27.70
Widowed	13	21.70
Household size		
1-2	12	20.0
3-4	16	26.70
5-6	29	48.30
7-8	03	5.00
Distance to market		
1	06	10.00
2	15	25.00
3	06	10.00
4	03	5.00
5	04	6.70
6	04	6.70
10	03	5.00
15	07	11.70
20	12	20.00
Total	**60**	**100.00**
Extension contact		
Once a year	32	53.30
Twice a year	14	23.30
More than three times a year	14	23.30
Membership of a cooperative society		
Member	29	48.30
Non-member	31	51.70

Source: Field survey, 2026

Distribution of Respondents According to Level of Engagement in Mushroom Production

Table 2 shows the level of engagement of respondents across different mushroom production activities. Selling fresh mushrooms recorded the highest mean score ($\bar{x}$ = 4.02), indicating that marketing of fresh produce was the most dominant activity, likely due to its quick income returns and minimal processing requirements. Mushroom cultivation ($\bar{x}$ = 3.60) and marketing ($\bar{x}$ = 3.58) also showed high involvement, suggesting strong participation across core production and distribution stages. Moderate engagement was observed in drying ($\bar{x}$ = 3.50) and substrate collection ($\bar{x}$ = 3.48), reflecting emerging value-addition practices. Processing activities ($\bar{x}$ = 3.30) recorded relatively lower participation, possibly due to technical and equipment constraints (Chang and Wasser, 2017). Wild mushroom collection had the lowest mean ($\bar{x}$ = 3.05), indicating a shift from traditional gathering to organized cultivation systems (Okeke and Gilbert, 2019). Overall, the results indicated diversified but production-centered engagement, consistent with findings that income-oriented activities dominate small-scale mushroom enterprises (Ajibola et al., 2021).

Table 2. Distribution of Respondents According to Level of Engagement in Mushroom Production

S/N	Level of Engagement in Mushroom	Sum	Mean	Std. Deviation
1	Involvement in selling fresh mushrooms	241	4.02	1.127
2	Involvement in mushroom cultivation	216	3.60	1.108
3	Involvement in mushroom marketing	215	3.58	1.013
4	Involvement in mushroom drying	210	3.50	1.242
5	Involvement in collection of mushroom substrates	209	3.48	0.873
6	Involvement in mushroom processing	198	3.30	1.078
7	Involvement in collection of mushroom substrates	195	3.25	1.083
8	Involvement in wild mushroom collection	183	3.05	1.111

Field survey, 2026

Table 3: Distribution of mushroom farmers according to the quantity of mushrooms produced

Table 3 presents the distribution of respondents according to the quantity of mushrooms produced. The largest proportion (23.3%) produced above 400 kg, indicating that a significant number of farmers produce a reasonable quantity pf mushroom, reflecting the enterprise's commercial potential (Okeke & Gilbert, 2019). About 18.3% each produced between 1–50 kg and 201–300 kg, suggesting variability in production scale among farmers. Smaller proportions were produced between 51–100 kg (11.7%) and 301–400 kg (11.7%), while only 5.0% produced 101–200 kg. The widespread across production categories indicated heterogeneous capacity, likely influenced by access to inputs, technical knowledge, and capital (Marshall & Nair, 2009). Higher output levels may be associated with better adoption of improved cultivation practices (Moges et al., 2021). Overall, the findings suggest that while some farmers remain small-scale producers, a considerable proportion are moving toward semi-commercial production levels.

Table 3: Distribution of mushroom farmers according to the quantity of mushrooms produced

Quantity of mushrooms produced (kg)	Frequency	Percent
1 – 50	11	18.3
51 – 100	7	11.7
101- 200	3	5.0
201 – 300	11	18.3
301 – 400	7	11.7
Above 400	21	34.9
	60	100.0

Source: Field survey, 2026

Distribution of respondents according to mushroom income

Table 4 presents the distribution of respondents according to income earned from mushroom production. The largest proportion (40%) earned between ₦1,000 and ₦100,000, indicating that mushroom farming served as a supplementary income source for many households. However, a substantial proportion (20%) earned above ₦500,000, suggesting that the enterprise has strong commercial potential when properly managed (Okeke & Gilbert, 2019). About 20% earned between ₦101,000–₦200,000, while 15% realized ₦401,000–₦500,000, reflecting moderate profitability levels. Only 5% fell within the ₦301,000–₦400,000 category indicating uneven income distribution. The variation in earnings may be attributed to differences in scale of production, market access, and managerial capacity (Marshall & Nair, 2009). These findings support evidence that mushroom cultivation can significantly enhance rural household income when supported with adequate inputs and extension services (Ajibola et al., 2021)

Table 4: Distribution of respondents according to mushroom income

Income from mushrooms (#)	Frequency	Percent
1000 - 100,000	24	40.0
101,000 - 200,000	12	20.0
301,000 - 400,000	3	5.0
401,000 - 500,000	9	15.0
Above 500,000	12	20.0
Total	**60**	**100.0**

Source: Field survey, 2026

Distribution of mushroom farmers according to their challenges

Table 5 highlights the major constraints affecting mushroom production, with a grand mean of 2.77 indicating moderate overall severity. The most critical challenge was a lack of access to quality spawn ($\bar{x}$ = 3.42), underscoring the central role of improved inputs in determining productivity and enterprise sustainability (Okeke & Gilbert, 2019). Difficulty in accessing credit ($\bar{x}$ = 3.35) and inadequate infrastructure ($\bar{x}$ = 3.17) were also prominent, reflecting structural and financial bottlenecks that limit expansion and value addition (Marshall & Nair, 2009). Limited technical skills ($\bar{x}$ = 3.00) further suggest capacity gaps that may constrain efficiency and output quality. In contrast, lack of technical information ($\bar{x}$ = 2.25) and poor product pricing ($\bar{x}$ = 2.33) were relatively less severe, indicating some level of market awareness among producers. The variability in standard deviations, particularly for infrastructure and market-related issues, suggests uneven access to production and marketing facilities. Overall, the findings reinforce evidence that input quality, financial access, and infrastructural support are decisive factors in small-scale mushroom enterprise performance (Moges et al., 2021; Ajibola et al., 2021).

Table 5: Distribution of mushroom farmers according to their challenges

Challenges to Mushroom Production	Sum	Mean	Std. Deviation
Lack of access to quality mushroom spawn	205	3.42	.591
Limited knowledge and skills in mushroom cultivation techniques	180	3.00	.487
Insufficient infrastructure for mushroom production (e.g., lack of proper storage facilities)	190	3.17	1.060
High initial investment required for mushroom production	178	2.97	.974
Limited access to markets for selling mushrooms	165	2.75	1.035
Difficulty in accessing credit or financial support for mushroom production and processing	201	3.35	.799
Lack of awareness or education about the nutritional and economic benefits of mushrooms	173	2.88	.976
Limited availability of equipment and technology for mushroom processing and packaging	174	2.90	.933
Poor extension contact.	154	2.57	1.095
Lack of technical information on mushroom production, processing and marketing	135	2.25	1.083
Cultural or social stigma associated with mushroom consumption	145	2.42	1.225
Distance to market	153	2.55	1.111
Poor price of product	140	2.33	1.100
Poor market information and distance to market	140	2.46	1.087
Grand Mean		**2.77**	

Sources: Field survey, 2026

Table 6: OLS Regression analysis of the relationship between selected socio-economic characteristics of the respondents and their level of engagement in mushroom production

Table 6 presents the results of the regression analysis using the Semi-log model to examine the relationships between various socio-economic variables and their impact on engagement in mushroom production.

Using the Semi-log (lead) model, the regression results revealed that household size significantly increased the dependent variable (β = 0.846, t = 5.091***), suggesting that a one-unit increase in household size raises the outcome by approximately 84.6%, highlighting the importance of labor availability. Sex has a negative and significant effect (β = -0.706, t = -3.401***), indicating that

gender disparities reduce the dependent variable by about 70.6% when moving from the reference category, consistent with constraints in access to resources (Doss, 2001). Income (β = 0.395, t = 4.327***), extension contact (β = 0.644, t = 3.726***), and distance to market (β = 0.471, t = 6.033***) are all positively significant, reflecting that improvements in financial resources, technical support, and market reach substantially enhance outcomes. Interestingly, membership of farmers' associations negatively affects the dependent variable (β = -0.788, t = -2.870***), potentially due to group obligations or inefficiencies (Adebayo et al., 2017). In contrast, age, education, and marital status are statistically insignificant, suggesting that household composition and structural factors dominate over individual demographic characteristics. The Semi-log model explains a substantial portion of variation ($R^2 = 0.653$), indicating that multiplicative relationships better capture the determinants of the dependent variable (Gujarati & Porter, 2009; Anderson & Feder, 2004).

Table 6: OLS Regression analysis of the relationship between selected socio-economic characteristics of the respondents and their level of engagement in mushroom production

Variables	Linear	Exponential	Semi-log+	Cobb-Douglas
Constant	1.956 (3.445) ***	0.837 (5.177) ***	-5.974 (-2.213) **	-1.084 (-1.398)
Age	0.007 (0.734)	0.003 (0.980)	0.334 (1.107)	0.100 (1.154)
Sex	-0.319 (-1.697) *	-0.116 (-2.162) **	-0.706 (-3.401) ***	-0.239 (-4.013) ***
Education	-0.035 (-1.318)	-0.011 (-1.495)	0.660 (0.757)	0.072 (0.288)
Marital Status	0.247 (1.138)	0.052 (0.847)	0.203 (1.027)	0.034 (0.607)
Household Size	0.153 (3.057) ***	0.040 (2.819) ***	0.846 (5.091) ***	0.231 (4.847) ***
Income	6.415E-007 (1.230)	1.291E-007 (0.870)	0.395 (4.327) ***	0.110 (4.192) ***
Distance to Market	0.043 (3.341) ***	0.012 (3.379) ***	0.471 (6.033) ***	0.132 (5.884) ***
Extension Contact	0.177 (1.839) *	0.051 (1.859) *	0.644 (3.726) ***	0.183 (3.691) ***
Membership of Farmers' Association	0.084 (0.283)	0.024 (0.290)	-0.788 (-2.870) ***	-0.235 (-2.981) ***
R^2	**0.470**	**0.460**	**0.653**	**0.637**
Adjusted R^2	**0.375**	**0.363**	**0.587**	**0.568**
F-ratio	**4.936*** **	**4.736*** **	**9.832*** **	**9.165*** **

Source: Field survey, 2026.
Key: *, ** and * is significant at 10%, 5% and 1% level of probability respectively**
+ = Lead Equation, and the values in bracket are the t-values.

The simple linear regression results show that **income** has a positive and significant effect on the dependent variable ($\beta = 9.595 \times 10^{-7}$, t = 2.847***), indicating that an increase in income, even by a small unit, leads to a measurable rise in the outcome variable. The model's intercept (constant = 3.033, t = 23.639***) represents the expected value of the dependent variable when income is zero. Although the R^2 is relatively low ($R^2 = 0.123$; Adjusted $R^2 = 0.107$), suggesting that income explains only about 12.3% of the variation in the dependent variable, the overall model is statistically significant (F = 8.104***), confirming that income is a meaningful predictor in this context. These results align with previous studies demonstrating that household financial resources positively influence socio-economic or production-related outcomes (Anderson & Feder, 2004; Feder et al., 1985).

Table 7: Simple linear regression analysis of the relationship between engagement in mushroom production and income

Model	Coefficient	Std Error	t-value
Constant	3.033	0.128	23.639***
Income	9.595E-007	0.000	2.847***
R-Square	0.123		
Adjusted R-Square	0.107		
F-ratio	8.104***		

Source: Field survey, 2026. Key: *** is significant 1% level of probability

CONCLUSION

Mushroom production in Umuahia Agricultural Zone presented a viable pathway for improving household income. The study found moderate engagement and a strong awareness of its benefits, though constrained by critical input and infrastructure gaps. There was statistically significant evidence that engagement in mushroom production improved income, particularly for younger, educated farmers.

RECOMMENDATIONS

The following recommendations were made:

- Strengthen extension services with mushroom-specific training
- Improve access to quality spawn and cultivation inputs
- Provide financial support mechanisms, such as microcredit schemes
- Encourage cooperative formation for better resource sharing and marketing

REFERENCES

Adesina, A. A., & Zinnah, M. M. (1993). Technology characteristics, farmer perceptions and Adoption decisions: A Tobit model application in Sierra Leone. *Agricultural Economics, 9*(4), 297–311.

Adebayo, S., Adeoti, A., & Olayide, S. (2017). Farmer organizations and agricultural productivity in Nigeria. *Journal of Development and Agricultural Economics, 9*(6), 151–161.

Adekunle, O. A., et al. (2016). Income and agricultural engagement among rural farmers. *Journal of Rural Development and Agricultural Economics, 8*(2), 45–58.

Ajibola, A., et al. (2021). Income impact of mushroom farming on smallholder households. *African Journal of Agricultural Research, 16*(4), 512–520.

Anderson, J. R., & Feder, G. (2004). Agricultural extension: Good intentions and hard realities. *The World Bank Research Observer, 19*(1), 41–60.

Chang, S. T., & Wasser, S. P. (2017). The role of mushrooms in human health and development. *International Journal of Medicinal Mushrooms, 19*(3), 245–256. https://doi.org/10.1615/IntJMedMushrooms.v19.i3

Doss, C. R. (2001). Designing agricultural technology for African women farmers: Lessons from 25 years of experience. *World Development, 29*(12), 2075–2092.

Feder, G., Just, R. E., & Zilberman, D. (1985). Adoption of agricultural innovations in developing Countries: A survey. *Economic Development and Cultural Change, 33*(2), 255–298.

Food and Agriculture Organization of the United Nations. (2018). *Rural agriculture and smallholder development report*. Food and Agriculture Organization of the United Nations.

Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill Education.

Maddala, G. S. (2001). *Introduction to econometrics* (3rd ed.). Wiley.

Marshall, E., & Nair, N. G. (2009). *Making mushroom cultivation sustainable for rural livelihoods* (FAO Non-Wood Forest Products Series No. 19). Food and Agriculture Organization of the United Nations.

Moges, T., et al. (2021). Socio-economic determinants of agricultural participation among rural households. *Journal of Development and Agricultural Economics, 13*(1), 33–42.

Okeke, G., & Gilbert, I. (2019). Mushroom production and marketing in Nigeria. *Nigerian Journal of Agricultural Economics, 10*(2), 89–101.

Tridge. (2025). *Mushroom farming in Nigeria: A lucrative opportunity with high demand and profitability*. Retrieved June 4, 2026.

Akinola, R. O., Adeyemi, T. A., & Bello, A. O. (2024). Women's participation in emerging Agricultural enterprises and rural livelihood improvement in Nigeria. *Journal of Agricultural Extension and Rural Development, 16*(2), 45–56.

Food and Agriculture Organization of the United Nations. (2024). *The status of youth in agrifood systems*. FAO. https://www.fao.org

Food and Agriculture Organization of the United Nations. (2025). *Agricultural extension and advisory services in Africa: Challenges and opportunities*. FAO. https://www.fao.org

International Fund for Agricultural Development. (2024). *Rural development report 2024: Inclusive rural transformation*. IFAD. https://www.ifad.org

Nwankwo, C. U., Eze, P. N., & Okafor, M. C. (2024). Household labour utilization and productivity among smallholder farmers in southeastern Nigeria. *African Journal of Agricultural Research, 20*(3), 122–131.

Olagunju, K. O., Yusuf, S. A., & Adebayo, O. O. (2025). Educational attainment and technology adoption among agribusiness entrepreneurs in Nigeria. *Journal of Agricultural Economics and Development, 14*(1), 66–78.

World Bank. (2024). *Strengthening farmer organizations for inclusive agricultural growth in Sub-Saharan Africa*. World Bank. https://www.worldbank.org

World Bank. (2025). *Youth employment and agribusiness development in Africa*. World Bank. https://www.worldbank.org