Original Research Article

Socio-Economic and Cultural Factors that Affect Mushroom Production in Southwest Nigeria

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Abstract

The study examined the factors affecting mushroom production in three states, namely, Ondo, Osun and Oyo randomly selected in Southwest of Nigeria. The sample size of twenty five mushroom producers was used for the study and this comprised all the mushroom growers in the southwest, Nigeria. The mushroom growers include two institutions and 23 individuals. The two institutions constitute (8%) while individual farms were made up of males (60%) and females (32%). The study revealed that 44% of the respondents were between 26 and 35 years of age, while 20% were between 46 and 50 years of age. It was found that 64% of the growers were married while 28% were single. The household size composition showed that 56% were between 1 and 5 while 36% were between 6 and 10. Only 36% and 32% of the respondents were found to consider taboos and other cultural beliefs, respectively, as important factors in their decision to grow mushrooms. Significant relationship was found to exist between household size, information on mushroom production, cultural beliefs, storage and output size of mushrooms. With a gross margin of 4,129,000 Nigerian Naira (\mathbb{N}) (\$32,769.84) mushroom production was considered to be profitable. It was recommended that extension service should be stepped up to reach the rural dwellers with the message of mushroom production while equally educating the people on the source of input and production strategies.

Keywords: demography; socio-economic factors; mushrooms; production; profitability; attitudes.

INTRODUCTION

Mankind had harvested wild edible mushrooms for millennia. These mushrooms were either eaten directly or preserved for later use by drying. Mushrooms have been treated as a special kind of food since earliest times. Many well known civilizations of the past have written reports indicating the harvesting of mushrooms in the wild and attempts at cultivating it. Chinese and Japanese chronicles indicate that the shiitake mushroom was collected in the wild and was given to Emperors as a tribute. The Romans ate mushroom on special occasions. The Yoruba race, predominantly in Southwest Nigeria, has folklores, maxims and proverbs woven around mushroom (Carera, 1989).

The beneficial effects of mushroom are manifested in its nutritional value, medicinal use, soil bioremediation, hallucinogenic effects and income. Many mushrooms are considered to be healthy food because they contain large amounts of high quality protein, vitamins (B_1 , B_2 and C) and minerals and have a negligible fat content (Chang et al., 1993). In China alone, more than 700 medicinal products with mushroom as the main ingredient are commercially available (Chang et al., 1993). These products are either sold as whole mushrooms (often dried), or in the form of capsule, powder or bitter tea. It was estimated that the market of medicinal and health product from mushroom had a turnover of five to six billion US Dollars in 1995 (Carera, 2000). Mushrooms have been found to have healing effects on heart and coronary diseases, cancer, diabetes and protection against free radicals and infection. In Nigeria, the idea of commercially cultivating mushrooms all year round is gradually being embraced by few 'elite' farmers, who hitherto made use of scanty information they had. With the beneficial effects of mushrooms, particularly its nutritional value, the ability of the enterprise to provide additional source of income and because it does not involve the use of a large parcel of land, it is hypothesized that mushroom cultivation in the country could be another goldmine for the farmers. In order to ameliorate the inhibiting factors, which could be perceived or anticipated, the study was undertaken to investigate the socio-economic and cultural factors that may affect mushroom production.

The main objective of the study was to carry out an investigation on the social, economic and cultural factors affecting mushroom production. The specific objectives were to identify the socio-economic characteristics of mushroom growers, identify the social, economic, cultural and demographic factors affecting cultivation, determine the effects of some selected variables on mushroom cultivation, and to determine its profitability.

MATERIALS AND METHODS

The study was carried out in the Southwest of Nigeria. The study area falls in the rain forest region. With the vegetation made up of trees and other forest products, there is a suitable organic matter from woods and stubbles for the growth of mushrooms, particularly the local varieties such as button mushrooms. The Southwest of Nigeria is made up of six states from which three were randomly selected. The selected states were Ondo, Osun and Oyo. Since only very few mushroom growers were known, all the identified growers in the three states (the list obtained from the states' Farmers Associations) were included in the study. The sample size was 25, comprising five from Ondo, seven from Osun and 13 from Oyo States. Out of the sample size were two institutions, one in Oyo State (Cocoa Research Institute of Nigeria (CRIN), Ibadan) and one in Osun State (International Breweries (IB), Ilesha).

All the growers were interviewed using a pretested interview schedule that was made up of close and open ended questions. The data obtained were analysed using descriptive statistics, such as frequencies, means and percentages. Also chi-square and Gross Margin Analyses were used.

Description of Variables

a) Demographic Variables: These comprised age, sex, marital status, household size and level of education of the respondents which were obtained from their direct responses.

b) Cultural Factors: These included the beliefs of the respondents, the prevailing taboos (what the people dread could happen to them if they do otherwise against some imagined or established practice in their locality) and superstitions in their localities.

c) Economic Variables: These were income, ease of input, source of input, price determination, source of fund, cost of product, information about product, farm size and farming experience.

d) Costs and Returns: These were determined by Gross Margin Analysis so as to determine the profitability of mushroom production in the study area.

e) Attitude: This variable was measured using 5-point Likert scale of measurement simply, strongly agreed, agreed, undecided, disagreed and strongly disagreed.

These measurements were scored 5, 4, 3, 2 and 1, respectively, for positive statements but were reversed (1, 2, 3, 4, 5) for negative statements. The total scores for each statement were obtained and averaged. The means of less than 2.50, between 2.50 and 3.50 and more than 3.50 were taken as "Disagreed", "Indifferent" and "Agreed", respectively, having compressed the five points to three points (Kerlinger, 1973).

RESULTS

Table 1 shows that in addition to the two identified mushroom growing institutions, which made up 8% of the total respondents, other respondents were 60% males and

 Table 1: Institutional factor and socio-economic characteristics of the respondents

Variables	Frequency	Percentage
Sex:		
Institutions (CRIN & IB)	2	8.0
Male	15	60.0
Female	8	32.0
Total	25	100.0
Age:		
Institutions (CRIN & IB)	2	8.0
26 - 35	11	44.0
36 - 45	7	28.0
46 - 55	5	20.0
Total		
Marital Status:	25	100.0
Institutions (CRIN & IB)	2	8.0
Single	7	28.0
Married	16	64.0
Total	25	100.0

32% females. It was found that 44% of the respondents were between the ages of 26 and 35 years, 28% were between 36 and 45 while 20% were between 46 and 55. The age composition implies that the practitioners were within the active years when they have the strength for farming activities.

The study further showed that while 28% of the respondents were single, 64% were married. Also, while the household size of 56% of the respondents was between one and five, 36% of the respondents had between six and ten.

The results in Table 2 showed that 68% of the respondents had between 1 and 5 years of farming experience in mushroom production, 28% had between 8 and 10 years while only 4% had more than 10 years experience of production. The results also showed that the price of mushrooms was determined by the retail price by 36% of the respondents and by cost of input plus margin by 64%. The various prices at which mushroom were sold by the respondents were \$300 (16%), №400 (8%), №500 (32%) and №600 (20%). The prices also included N700 (12%) and N800 (12%). It was also found that while 72% of the respondents relied on their personal savings for funding the enterprise, 28% of the respondents obtained loan through formal institutions for funding mushroom production. However, all respondents affirmed that they purchased their own input. Further findings also showed that information about mushroom products was obtained through advertisement (52%) and through open display (48%). In addition, 28% of the respondents had an annual yield of 500 kg or less; 52% produced between 501 kg and 1,000 kg while 12% produced between 1001 kg and 1500 kg annually. Finally, 8% of the respondents had annual production of over 1500 kg. While 92% of the respondents had storage facility for mushroom 8% had not.

Table 3 showed that while 36% of the respondents agreed to the existence of taboo that prohibits mushroom production

Table 2:	Economic	characteristics	of the	respondents
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Variables	Frequency	Percentage
Farming Experience:		
1-5 years	17	68.0
6 – 10 years	7	28.0
Above 10 years	1	4.0
Total	25	100.0
Farm Size:		
Small farm (≤ 1ha)	23	92.0
Large farm (\geq 1ha)	2	8.0
Total	25	100.0
Price Determination:		
Prevailing retail price	9	36.0
Cost of input plus margin	16	64.0
Total	25	100.0
Source of Fund:		
Formal	7	28.0
Informal	18	72.0
Total	25	100.0
Source of Input:		
Purchase	25	100.0
Total	25	100.0
Cost (₦)/Kg) of mushroom		
300	4	16.0
400	2	8.0
500	8	32.0
600	5	20.0
700	3	12.0
800	3	12.0
Total	25	100.0
Information about Product:		
Advertisement	13	52.0
Open display	12	48.0
Total	25	100.0
Annual output:		
≤500kg	7	28.0
501 – 1,000 kg	13	52.0
1,001 – 1,500 kg	3	12.0
Above 1,500 kg	2	8.0
Total	25	100.0
Storage:		
Yes	23	92.0
No	2	8.0
Total	25	100.0

Table 3: Socio-cultural characteristics of the respondents

Variable	Frequency	Percentage
Taboo:		
Yes	9	36.0
No	16	64.0
Total	25	100.0
Consideration for Beliefs:		
Yes	8	32.0
No	17	68.0
Total	25	100.0
Imported Variety:		
Yes	14	56.0
No	11	44.0
Total	25	100.0
Selling to Local People:		
Yes	20	80.0
No	5	20.0
Total	25	100.0

Source: Field Survey Data

in the study area, 64% did not. While 32% of the respondents confirmed that they often give consideration to beliefs that highly prohibit their mushroom production activities, 68% did not. It was also found from the results in Table 3 that 56% of the respondents grew imported variety of mushroom just as 80% sold their products within the locality and 20% sold theirs outside their immediate locality.

The cost of investment (depreciation) was not included in the table because the growers do not use any fixed assets. Most assets used are variable in nature.

Table 6 shows the Gross Margin Analysis of mushroom production in the study area. The Total Variable Cost (TVC) was found to be \$80,595.24, while the Total Income (TI) was found to be \$113,365.08. This gave a Gross Margin (GM) of \$32,769.84. Therefore, the Gross Margin average per farmer was \$921.54.

DISCUSSION

Results from the socio-cultural characteristics of the respondents (Table 3) showed that 36% confirmed that there were prevailing taboos against mushroom production while

Table 4: Analysis of the respondents' attitude towards selected variables

Items	No	Sum	Means	SE	Remarks
Taboos prevailing in your locality	25	50	2.00	.00	Disagree
Price of the products is determined by certain factors	25	82	3.28	.97	Indifferent
There is ease in the acquisition of input	25	39	1.56	.50	Disagree
Consideration of cultural beliefs before venturing into the enterprise	25	42	1.68	.47	Disagree
Selling within the locality	25	30	1.22	.42	Disagree

Less than 2.50 = Disagreed; 2.50 - 3.50 = Indifferent; More than 3.50 = Agreed SE = Standard Error Source: Field Survey Data

Variable	X ² cal	X ² Tab	DF	Remark
Age versus (Vs) Farm size	3.13	5.99	2	Not significant
Age Vs Ease of Input	2.79	5.99	2	دد
Sex Vs Farm Size	2.08	3.84	1	دد
Sex Vs Ease of Input	0.33	3.84	1	دد
Marital status Vs Farm Size	0.89	3.84	1	"
Marital status Vs Ease of Input	0.06	3.84	1	"
Household size Vs Place of Sale	7.61	5.99	2	Significant
Level of Education Vs Farm Size	0.79	5.99	2	Not significant
Level of Education Vs Ease of Input	2.72	5.99	2	"
Years of Experience Vs Farm Size	3.17	5.99	2	"
Years of Experience Vs Ease of Input	4.88	5.99	2	"
Information about Product Vs Farm Size	0.03	3.84	2	"
Information about Product Vs Output Size	17.15	7.82	3	Significant*
Cultural belief Vs Farm Size	0.98	3.84	1	Not Significant
Cultural belief Consideration Vs Output	9.21	7.82	3	Significant
Storage Vs Farm Size	0.13	3.84	1	Not Significant
Storage Vs Output	12.61	7.82	3	Significant

 Table 5: Chi-Square analysis of the relationship between the respondents' socio-cultural, socio-economic characteristics and selected variables (0.05 level of significance)

Source: Field Survey Data

Table 6: Gross margin analysis of mushrooms cultivation in the study area

Items	Amount Per Annum
Total Variable Cost (TVC)	
(Labour, Cost of Substrate, Power/Presticides, Packaging and others)	№10,155,000.00
	(\$80,595.24)
Total Income (TI) (sales)	№14,284,000.00
	(\$113,365.08)
Gross Margin (GM) (TI – TVC)	₩4,129,000.00
	(\$32,769.84)
GM/Farmer (GM/Total Respondents)	₩116,114.00 (\$921.54)

N = Nigerian Naira, \$ = US Dollar

Source: Field survey

The cost of investment (depreciation) was not included in the table because the growers do not use any fixed assets. Most assets used are variable in nature.

64% confirmed that there were none. In the same vein, 32% of the respondents responded that they gave considerations to beliefs before venturing into their production practices while 68% did not. In addition, 36% of the respondents confirmed the effect of socio-cultural beliefs on their production while 64% did not (Tables 3, 4 and 5). This result therefore gave rise to the fact that socio-cultural factors had some influence on mushroom production as an enterprise in the study area. This is likely to be true in some developing countries of the world where people have great affinity to local beliefs and customs.

The finding showed that a larger percentage of the mushroom growers had small household size; hence the percentage of the consumed output might not significantly affect the income. With 60% of the respondents having tertiary education, according to the result (Table 1),

mushroom production may be taken as an 'elites' venture. This is likely to improve the techniques of production, since research information on the enterprise would be more likely adopted. Studies have found a significant relationship between level of education and level of adoption of innovations (Alfred et al., 2003; Okunlola et al., 1998). Furthermore, the study showed that 28% of the respondents grew only mushroom while 72% grew some other crops in addition to mushroom. This is a common practice among small holding farmers in the developing countries of the world who tend to be risk aversed. They have the belief that multiple cropping compensates for bad harvest of any of the major crops.

About 96% of the respondents were found to have been in mushroom production for not more than 10 years of experience. This further confirms that mushroom production is a recent enterprise in the study area. It was also found that 92% of the respondents maintained a farm size of less than one hectare each, while only 8% had above one hectare. While some types of mushroom require a large hectare of land as a measure of their unit of production, some others depend only on the presence of rich organic material. Such land requirement might be scattered instead of being on a single site. Fragmented farm holding is one of the characteristics of agricultural production in Nigeria and in the developing countries in general (Akinbode, 1992).

The results implied that cultural beliefs and taboos do not constitute a serious problem to the production of mushroom in the study area. This might be because restriction is not known within the study area to have been posed by any form of local tradition or practice, except through the people's perception resulting from the age long adherence to the belief in tradition and taboos. Cultural compatibility has been found to be a factor that affects the adoption of some agricultural practices (Alfred et al., 2003; Okunlola et al., 1998).

Based on the key to interpretation for the respondents' attitude, findings (Table 4), showed that the respondents "disagree" (unfavourable disposition towards) with the question bordering on prevailing taboos in the locality, ease of acquisition of input and on consideration of cultural beliefs before venturing into mushroom production. The respondents also "disagree" on the questions bordering on whether socio-cultural beliefs had effect on the enterprise. When respondents "disagree" with a psychological statement stated in positive form, it indicates that the fact expressed by the statement is not reckoned with as an important factor. However, on the one bordering on the factors determining the price of their output, the respondents were "undecided". This result further confirms that the effect of cultural beliefs on mushroom production is not well pronounced in the study area.

The results (Table 5) showed that there was no significant relationship between age and farm size, between age and ease of input, between sex and farm size and also between sex and ease of input. There was also no significant relationship between marital status and farm size, between marital status and ease of input. There was, however, a significant relationship between household size and place of sale. There were also significant relationships between information about product and output size, between cultural beliefs considerations and output and between storage and output at 5% level of significance. Though, earlier results showed that cultural beliefs did not constitute a serious problem to the production of mushroom, the significant relationship that was obtained between cultural beliefs considerations and output may be attributed to the fact that the respondents might not have considered their response to the influence of cultural considerations to their output as important or noticeable.

The results which showed significant relationship between information about product and output size implies that, information on products and particularly on marketing opportunities had influence on the total yield. Also, storage availability enhances output, this might be because storage facility enhances the quality of mushroom, hence, its marketability. In summary therefore, household size, information about product, cultural beliefs and storage are the socio-economic and cultural variables that significantly affect the mushrooms production. Considering an average Gross Margin per farmer as $\Re 1$ 16,360.00 (\$921.54), mushroom production in the study area could therefore be said to be profitable.

CONCLUSION

The study revealed that 44% of the respondents were between 26 and 35 years of age, 20% were between 46 and 50 years of age. It was found that, 64% of the growers were married and 28% were single. The household size composition showed that 56% were between 1 and 5 and 36% were between 6 and 10. Only 36% and 32% of the respondents were found to consider taboos and other cultural beliefs, respectively, as important factors in their decision to grow mushrooms.

The study revealed that household size, information about production, cultural beliefs consideration and possession of storage facility were the factors that have significant association with mushroom production. Mushroom production has been found to be profitable and an investment into mushroom production therefore, can be said to be a worthwhile exercise.

Based upon the findings from the study, it is hereby recommended that

- Since a larger percentage of the present producers are highly educated, efforts must also be made by extension to reach the rural farmers about the benefits accrued from mushroom production.
- Extension's effort must also include awareness of the sources of inputs and marketing opportunities, since the enterprise is yet to be embraced by the majority of the farmers.
- The producers and would-be-producers could be formed into cooperatives for the purpose of pooling their resources together so as to be able to afford some infrastructure such as storage facility, since the facility was found to have significant relationship with output
- Emphasis should be made to re-orientate the people on their belief in taboos and other superstitious claims as regards mushroom production. This can be done through enlightenment campaigns.

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