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Income Generation from Shea Butter Production by Women in North Central States of Nigeria.

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Abstract

The study assessed women involvement in shea butter production in the shea growing areas of the north central states of Nigeria by specifically examining their socio-economic characteristics, ascertaining their income generation and their level of control over the resources used. Data were collected from 193 respondents from Niger and Nasarawa States of Nigeria using questionnaire and interview schedule method and analyzed using percentages and t-test statistics. Results revealed that most respondents had between 1-5 years' experience in shea butter production, were married, illiterate, young (30-39 years), with family size of 5-7 persons and did not belong to any farm association. They had significant control over resources such as mortar, pestles, and bags, and threads used in shea butter production since most of these were purchased by them. Their major finance source was personal savings (69.1%). Respondents principally carried out direct marketing or sales (99.5%). The average output (shea butter) was 3,691kg per annum. Average income of all respondents was about ₦795,772 but about ₦43,031.0 individually. T-test results revealed that respondents' average output in Nassarawa State (2582.47kg) was significantly (t=2.00; p≤0.05) lower than that in Niger (4811.75kg) State. Niger State respondents earned significantly (t=3.56; p≤0.05) higher income (₦47,861.86) than Nassarawa State respondents (₦38,958.33). The study recommended that the women groups should be should be linked to microfinance

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institutions to increase their access to finance, trained on shea butter production process in order to improve their competence.

Introduction

The Shea Tree, *Vitellaria paradoxa*, is a principal tree component of the agro-forestry parklands in the dry Savannah Belt of West Africa from Senegal in the west to Sudan in the east and onto the foothills of the Ethiopian highlands (Boukoungou 1987; Hall *et al,* 1996). It occurs extensively in the Southern Guinea Savanna and less abundantly in the Northern/Sudan Savanna. In these areas, parklands are dominated by few tree species among which is the shea (Boffa, 1999).

Baba (2008) stated the benefits derived from the shea butter tree as follows – the pulp of the fruit is edible while the bark and root are used in traditional medicine. Above all, the seed, when crushed, yields vegetable oil that can be used in cooking, soap making, skin and hair care. This makes it a valuable trade commodity. Collecting the nuts and making butter have traditionally been women's work. Suleiman (2008) observed that marketing the oil was giving women better opportunities, primarily through improved income.

Shea tree activities in North Central States of Nigeria are sources of income to many people, especially women, but the level of income received is generally low when compared with the potentials. This is attributable to several factors. First the handling and processing methods adopted result in low quality of fruits and butter which fetch low prices and this reduces access to international markets. This situation is worsened by lack of awareness of the collectors and processors of superior handling and processing methods and equipment. Even in cases where they are aware, the cost of such equipment is generally beyond what they can afford as individual operators. Secondly, most of the collectors and operators are in small, scattered and remote areas which make access to markets difficult resulting in low prices. Thirdly, they lack bargaining power as they operate mostly as individuals. This frequently places them at the mercy of middlemen who usually go into the rural areas to purchase the nuts and butter. The collectors and processors who are mostly women therefore do not reap the expected benefits and recognition for their labour.

In order to transform these shea tree activities from a marginal economic activity into a veritable vehicle of poverty alleviation, there is the need to assess the involvement of the women in the shea industry and create awareness on how to obtain higher quantity and quality of shea nuts and butter through better handling, processing and marketing procedures for higher economic returns.

Purpose of the study

The study assessed women involvement in shea butter production in the shea growing areas of the north central states of Nigeria by specifically:

1. examined the socio-economic characteristics of respondents,

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2. ascertained their level of involvement and
3. assessed their level of control over the resources used in the production of the shea butter in the study area.

The following null hypotheses were tested for the study:

Hypothesis 1: There is no significant relationship between socio-economic characteristics of shea butter producers and their participation in shea butter production activities

Hypothesis 2: There is no significant difference in income between shea butter producers in Niger and Nassarawa states

Hypothesis 3 There is no significant difference in output between shea butter producers in Niger and Nassarawa states

Methodology

The area of study is the North Central Zone of Nigeria. The zone is made up of six states namely Kogi, Benue, Niger, Kwara, Nassarawa, Plateau. The zone has a population of 21.1 million (NPC, 2006) and a land area of 235.110 km^2 within the Guinea Savannah region of Nigeria. The zone has seven months of rainfall in the year (April – October) with July and August having the heaviest rainfall. This area has the largest concentration of shea trees in Nigeria (Okolo *et al.,* 2009). Two States Niger and Nasarawa were purposively selected because of the high density of shea trees and high level of activities in shea butter production and trade in the states.

Niger State has the largest land area in Nigeria (76,363 sq km). It has a population of 3,950,245 (2006, census). The state is endowed with great potential for agricultural production because of the availability of abundant arable land. Nasarawa State has total land area of 27,117sq km with a population of 2,040,097 (2006 census). Nasarawa State has agriculture as the mainstay of its economy with the production of varieties of cash crops throughout the year.

There are three zones in Niger State Agricultural and Rural Development Project- Zone A (Niger South), Zone B (Niger Central), Zone C (Niger North). For administrative purposes, each zone is made up of 10 extension blocks. Each block has 8 extension circles with each extension circle having 8 extension sub-circles. From this structure, each zone is made up of 640 extension sub-circles and a total of 1920 extension sub-circles in the three zones of the entire state. There are also three zones in Nassarawa State Agricultural and Rural Development Project also namely Western zone, Eastern zone and Southern zone. Each zone is made up of 10 extension blocks, each block has 8 extension circles, while the extension circle has 8 extension sub-circles and a total 1920 extension sub-circles in the entire state. In each state, there are 20 registered women shea butter producers per block. There is therefore a total of 200 women shea butter producers that formed the sample frame in each state. Fifty percent (50%) of the sample frame i.e. 100 women shea butter producers, were randomly selected in each state for the study. The population for this study included all women shea butter producers

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in Niger and Nasarawa states of Nigeria. Sampling of respondents was done using the multi-stage sampling process. The first stage involved the purposive selection of Zone A (Niger South) and Western zone in Nasarawa State for their more intensive shea butter production activities. In each State the zone like the other zones had 10 extension blocks. Each block had 20 registered women shea butter producers making a total of 200. In the second stage 50% of the sample frame i.e. 100 women shea butter producers, were randomly selected for the study.

Data were obtained from primary (questionnaire/interview schedule) and secondary (i.e. textbooks, journals and publications) sources. A comprehensive open and close-ended questionnaire/interview schedule was developed and administered to the women shea butter farmers who constitute the target population of the study. Secondary data were collected from literature and records of the ADPs.

Data collected were analyzed using chart, mean, standard deviations, percentages and t-test.

Results and Discussion

The socioeconomic characteristics of respondents are shown in Table 1. The result for age revealed that the majority of the shea butter producers in the study area were within the age bracket of 30-39 years, 26.9%, within 40-49 years, 11.9% were less than 30 years while 1.6% was within 50-59 years of age. The average age of the respondents was 36 years (35 years for Nassarawa and 37 years for Niger respondents) suggesting that the producers were relatively young. Ani *et al*., (2012) reported an average age of about 30 years for shea butter processors in neighbouring Benue state of Nigeria, confirm this finding. However, studies by Matanmi *et al*., (2011) in Kwara state revealed that shea butter producers were generally older with over 80% of their respondents being above 40 years old.

The pooled results (Table 1) for the marital status of the respondents showed that most of the respondents were married (95.3%). The finding agrees with the results of Matanmi *et al*., (2011) who reported that most shea butter producers were married. The fact that almost all those involved in shea butter production were married was an indication that shea butter production might be regarded as a domestic chore for married women in the study area. The level of divorce among the respondents was very low with a percentage of 1%. Shea trees which produce the fruits processed into shea butter by women are generally owned by their husbands. Kipot and Franzel (2012) reported that in patrilineal societies, the rights of women to their husbands' land, trees etc cease to exist upon divorce. The society in the study area is patrilineal and that probably accounts for the preponderance of married women in shea butter production as they have access to the fruits of their husbands' shea trees. An examination of the respondents' household size showed that about 46.6% had 5-7 persons living with them, about 19% had 8-10 persons staying with them while 22.3% had over 10. The average household size was 8 (7 for

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Niger and 9 for Nassarawa state respondents) indicating that the respondents had several persons staying with them to assist in the shea butter production operation. A household size of 7 was reported for shea butter producers in Benue state by Ani *et al*., (2012).

On educational status, the results revealed that majority of them were not literate with a percentage of 86% having no formal education. This finding agrees with the report of Matanmi *et al.,* (2011) who also found that most shea butter producers were not educated. This low level of education may affect their adoption of new practices such as improved processing methods since it is asserted that being educated enables farmers to understand more easily the use of improved technologies (Tshivunza, *et al*, 2001).

Majority of the respondents were Muslims with a percentage of 92.7% (Table 1). The study area had a predominantly Muslim population with few Christians (7.2%). All were involved in shea butter production showing that religion had no influence in the activity. The pooled results for the major occupation of the respondents revealed that most of them were farmers. The percentage was 89.6%. Very few or 7.3% were into trading as their major occupation. Shea butter production is generally not a sole or major occupation among the respondents. This was because activities of shea butter production were carried out when fruits for processing were available and this usually coincided with when there were little or no farming activities in the study area.

In terms of experience in shea production the result of Table 1 showed that majority or 46.6% had been involved for 1-5 years, 30.1% had been for 1-6 years while 16.1% had been involved for 11-15 years. The average shea butter production experience of the respondents was 11 years showing that the respondents were quite experienced in shea butter production. The results for both states indicate that Nassarawa state respondents had relatively more experience than Niger respondents with an average of 15 to 8 years respectively.

About 41.5% of the respondents were not members of any farm association. About 32.1% of them belonged to Fadama association, 15.5% belonged to Enaekokparachizhi group while only 6.7% belonged to shea butter fruit association. Membership of farm organizations has the benefit of enabling farmers' access information and capital among others (Madukwe, 2005).

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Table 1: Socio-economic characteristics of respondents

Characteristics	Categories	Niger Percentage (n=96)	Nassarawa Percentage (n=97)	Total Percentage (n=193)
Age (range)	<30	7.3	16.5	11.9
	30-39	58.3	60.8	59.6
	40-49	31.3	22.7	26.9
	50-59	3.1	-	1.6
Marital status	Single	5.2	-	2.6
	Married	90.6	100	95.3
	Widow	2.1	-	1
	Divorced	2.1	-	1
Household size range	4 & below	16.7	7.2	11.9
	5-7	58.3	35.1	46.6
	8-10	15.6	22.7	19.2
	>10	9.4	35.1	22.3
Educational level	No formal education	86.5	85.6	86
	Primary sch.	11.5	11.3	11.4
	SSS		3.1	1.6
	NCE	2.1	-	1
Religion	Christianity	7.3	7.2	7.3
	Islam	92.7	92.8	92.7
Major occupation	Farming	80.2	99	89.6
	Civil service	5.2	1	3.1
	Trading	14.6	-	7.3
Production experience	1-5	79.2	14.4	46.6
	6-10	11.5	48.5	30.1
	11-15	6.3	25.8	16.1
	>15	3.1	11.3	7.3
Membership of Farm Associations	Fadama association	14.6	49.5	32.1
	Shea fruit association	1	12.4	6.7
	Enaekokparachizhi Cooperatives		30.9	15.5
	None	2.1	6.2	4.1
		82.3	1	41.5

Respondents' Sources of Inputs

Shea nuts were largely purchased by majority (65.6%) of Niger State respondents, while Nassarawa State respondents claimed they collected theirs from the wild. Although the shea tree grows in the wild, the rights to collect shea fruits vary according to land tenure arrangements of the area. According to Grigsby and Force (1993), Schrechenberg (1996), Hatskevich and Essilfie(2013), even when the women are not owners of the land on which the shea butter tree grows they are made to pay some amount for whatever shea butter fruits collection they make by the land owners.

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The major source of labour was hired labour with percentage of 65.6% and 91.8% for Niger and Nassarawa States respectively (Table 2). Most or 99% of Nassarawa State respondents do not use chemicals in their production process while 46.9% of Niger state respondents used chemicals. Chemicals such as hexane are used for extracting the oil or butter. Mortar and pestles are used for grinding the fruits were largely purchased by the respondents with a percentage of 63.5% and 76% for Niger and Nassarawa State respondents respectively. The same is true for such inputs as bags and threads, mixer and driers and pots/trays. However, for firewood used for parboiling the shelled fruits, while 52.1% of Niger state respondents purchased the input, 94.8% of Nassarawa State respondents collected theirs from the wild. Access to fund for the acquisition of these inputs may be a limiting factor to increase in butter production as most of the respondents relied only on their personal savings and funds borrowed from money lenders. The findings also show that the respondents had high level of control over most of the resources they used in shea butter production since they purchased them. By purchasing these items the women could determine how such resources were used. The United Nations (2009) noted that when women farmers purchased an input they can decide for themselves how such inputs are used.

Table 2: Respondents' mode of resource acquisition

	Not Used		Hired		Borrowed		Purchased		Inherited		Free	
	*NI %	NA %	NI %	NA %	NI %	NA %	NI %	NA %	NI %	NA %	NI %	NA %
Shea nuts	-	-	-	-	-	-	65.6	-	-	-	18.8	100
Labour	7.31	1.06	65.5	91.8	7.3	-	9.4	-	4.2	2.1	6.3	5.2
Chemicals	16.7	99.0	-	-	16.7	-	46.9	1.0	-	-	1.0	-
Mortar/Pestles	1.0	-	8.3	-	16.7	-	63.5	76.0	9.4	24.0	1.0	-
Bags/threads	2.1	29.9	7.3	-	15.6	-	64.6	69.1	8.3	24.0	2.1	-
Mixer/drier	1.0	3.1	10.4	-	15.6	3.1	61.5	84.5	8.3	1.0	3.1	-
Pots/trays	1.0	1.0	8.3	-	17.7	1.0	60.4	88.7	9.4	12.4	3.1	-
Firewood	2.1	-	-	-	15.6	-	52.1	4.1	-	10.3	17.1	98.4
Transporting vehicles	3.1	-	63.5	96.9	14.6	-	14.6	1.0	4.2	-	2.1	2.1

*NI – Niger State
NA-- Nasarawa State

Respondents' Sources of Finance

Table 3 shows the respondents' sources of finance. From the pooled results, 50.3% of them used their personal savings, 17.8% borrowed money from money lenders, 51.3% collected loan from cooperatives. Personal savings therefore constituted the major source of finance for the respondents in their business. This probably accounted for the low level of investment in the

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business which would affect the level of output. Nassarawa State respondents depended more on personal savings with a percentage of 69.1% compared to Niger state (36%). Similarly, there was high dependence on moneylenders by respondents from Nassarawa State (30.9%) compared to the 5.6% of Niger State respondents. Very few respondents patronized commercial bank loans. It is said that high interest rates, collateral requirements and cumbersome documentation demanded by the formal financial institutions deter many clients such as shea butter producers from easily assessing formal or commercial bank loans (Esinam (2010).

Table 3: Respondents' sources of finance

*Sources	Niger	Nassarawa	Pooled
	Percentage (n=96)	Percentage (n=97)	Percentage (n=193)
Personal savings	36	69.1	50.3
Bank loan	2.2	1	1.5
Money lenders	5.6	30.9	17.8
Cooperatives	56.2	52.6	51.3

**Multiple response*

Marketing Role Performed by Respondents

The marketing roles performed by respondents are shown in Table 4. Over ninety-nine percent (99.5%) of the respondents conducted sales, 20.2% engaged in distribution, 19.7% carried out packaging, 9.8% engaged in advertisement while 3.6% carried out some form of quality control. Almost all respondents from both states were into sales (Nassarawa State, 99%; Niger State, 100%). Respondents therefore are also engaged in marketing their processed butter.

Table 4: Marketing role performed by respondents

*Role	Niger	Nassarawa	Total
	Percentage (n=96)	Percentage (n=97)	Percentage (n=193)
Sales	100.0	99.0	99.5
Distribution	39.6	1.0	20.2
Packaging	36.5	3.1	19.7
Advertisement	2.1	17.5	9.8
Quality determination	2.1	5.2	3.6
Market identification	3.1	-	1.6

**Multiple response*

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Output and Income of Respondents

Respondents' output level

The results show that annually 11.4% produced 1000kg and below, the majority or 50.3% produced 1001-2000kg, 15% produced 2001-3000kg, 7.8% produced 3001-4000kg while about 13% produced above 5000kg (Table 5). The average output of the respondents was 3,691kg. Niger respondents had an average of 4811.75kg while Nassarawa state respondent produced an average of 2582.47kg suggesting that the former had higher output. This higher output level may lead to higher income.

Table 5: Respondents' output level

Output (kg)	Niger	Nassarawa	Pooled
	Percentage (n=96)	Percentage (n=97)	Percentage (n=193)
1000 & below	14.6	8.2	11.4
1001-2000	36.5	63.9	50.3
2001-3000	13.5	16.5	15.0
3001-4000	12.5	3.1	7.8
4001-5000	3.1	2.1	2.6
>5000	19.8	6.2	13.0
Total	100.0	100.0	100.0

Mean = Niger *(4811.75), Nassarawa (2580.47); pooled (3691)*

Income Distribution of Respondents

The average income of the respondents was about ₦43,031.09 (Table 6). Niger State respondents earned higher (₦47,861.86) than Nassarawa State respondents with an average income of ₦38,958.33. This may be traced to the higher output recorded by the respondents in the state as recorded in Table 5. Results by Matanmi *et al.,* (2011) noted that most shea butter producers earned about N50,000 per annum. Ani *et al*.,(2012) reported an annual average income of about ₦66,000 for shea butter processors in their study.

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Table 6: Income distribution of respondents

Income(₦)	Niger	Nassarawa	Pooled
	Percentage (n=97)	Percentage (n=96)	Percentage (n=193)
10,000 & below	1.0	5.2	1.6
10,001-20,000	2.1	8.3	2.6
20,001-30,000	3.1	12.5	3.6
30,001-40,000	11.3	21.9	13.5
40,001-50,000	34.0	19.8	31
>50,000	48.5	32.3	47.7
Mean	₦47,861.86	₦38,958.33	₦43,031.09

Difference in Output between Shea Butter Producers in Niger **and Nassarawa States**

The average output for Nassarawa state and Niger states were 2582.47 and 4811.75 respectively (Table 7). There is a significant difference (t=2.0; $p \leq 0.05$) in output of the shea butter producers in the two states. The finding indicated that Niger State respondents produced significantly higher quantity of shea butter than Nassarawa State respondents. The density of shea trees is known to be highest in Niger state that any other place in Nigeria (Okolo et al., 2009).

Table 7: Difference in output between shea butter producers in Niger **and Nassarawa States**

State	N	Output (kg)		t- value
		Mean	Difference	
Niger	96	4,811.75	2,229.27	2.00*
Nassarawa	97	2,582.47		

**P≤0.05*

Difference in Income between Shea Butter Producers in Niger **and Nassarawa States**

T-test was used to test the difference in income of shea producers in Niger and Nassarawa States. The results are presented in Table 8. The average income of the shea butter producers for Nassarawa state and Niger states were ₦236219.38 and ₦1361154.5 respectively. This means that there is a significant difference in income of the shea butter producers in the two states (t=3.56; p≤0.05). The finding indicated that Niger state respondents earned significantly higher income than Nassarawa state respondents. This

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was expected as Niger state respondents had higher output in shea butter production.

Table 8: Difference in income between shea butter producers in Niger **and Nassarawa States**

State	N	Income		t- value
		Mean	Difference	
Niger	96	47,861.86	8,103.52	3.56*
Nassarawa	97	38,958.33		

**P≤0.05*

Conclusions and Recommendations

Shea butter production process is dominated by women with no formal education and their participation in the process was affected by or related to some socio-economic characteristics of the women. The women had high level of control over most of the resources they used in shea butter production since most of these were purchased by them. By purchasing these items, the women could determine how such resources were used. The respondents carried out different marketing roles especially direct marketing or sales with a percentage of 99.5%. The average output (shea butter) produced by the respondents was 3,691kg per annum. The average income of all the respondents was about ₦795,772 but about ₦43,031.0 individually.

The women should be encouraged to join cooperatives. The women should be linked to microfinance institutions and input sources to enhance their production. The women should also be trained on shea butter production process in order to improve their competence. This training will make up for their lack of formal education.

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