

ASSESSMENT OF SHEA BUTTER PROCESSING AMONG RURAL DWELLERS IN ATISBO LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

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ABSTRACT

Given the cost-benefit discrepancy of Shea butter production in Nigeria, this study aims to assess Shea butter processing among rural dwellers of Atisbo Local Government Area of Oyo State. Oyo State is a major Shea butter producing state in Nigeria and Atisbo is the head quarter of the production. The population for the study comprised all Shea butter processors in Atisbo Local Government Area of Oyo State. Multistage sampling procedure was used to select 120 respondents for the study. Result reveals that the Shea butter processors are mainly females, middle aged, married, with no formal education. They have large household size, and have Shea butter processing as their primary occupation. However, the processing techniques are manual, time consuming, and highly demanding. There are limited market opportunities for the product, and the processors hardly seek information to improve their activity. Besides, limited credit facilities and processing equipments are the major constraints of the processors. It is concluded that Shea butter production in the area is lower than expected, and its quality is questionable. It is recommended that Shea butter processing should be vitalized by governments and NGOs by adopting it as a poverty alleviation initiative, because of its enormous potentials.

Introduction

Shea butter tree (*Vitellaria paradoxa*) is indigenous to Sub-Saharan Africa and belongs to the family *Sapotaceae*. It grows in the wild and has a huge economic and ecological potential. Shea butter is naturally rich in Vitamins A, E, and F (Okullo et al, 2010). Shea butter is widely utilized for domestic purposes such as cooking, skin moisturizer and commercially as an ingredient in cosmetic, pharmaceutical and edible products (Alander, 2004). The fruit when very ripe can be eaten raw. Traditionally, Shea butter are used as cream for dressing hair, protecting skin from extreme weather and sun, relieving rheumatic and joint pains, healing wounds/swelling/bruising, and massaging pregnant women and children. It is also used in treatments of eczema, rashes, burns, ulcers and dermatitis. Lovett (2004) concluded that Shea butter is a high-value export to Europe and the United States, where it is considered a luxury.

Maranz and Wiesman (2003) stated that at least 500 million production trees are accessible in West Africa, which equates to a total of 2.5 million tonnes of dry kernel per annum (based on 5 kg dry kernel per tree). They also asserted that over two million people in 13 African countries process the commodity for cash and consumption. Shea butter is mostly processed manually in small villages in Nigeria. Shea butter processing is done by village women, and the method which they use is one passed down through generations. Moreover, there is no estimate of the overall balance between cost of input and the economic output of Shea butter, as the processing is not only arduous, labour-intensive and time consuming, it also requires large amounts of water and firewood. Bonkougou (2005) estimated that the traditional processing of 1kg of Shea butter takes one person 20-30 hours, from collection to final product. It is also estimated that 8.5-10.0kg of fuel-wood is needed to produce 1kg of Shea butter.

The traditional method involves the following activities: harvest the nuts from the farm, accumulate in piles or pits, heat the nuts – boil (preferred) or roast, dry the whole nuts (if boiled), de-husk the nuts to get kernels (usually cracked by hand), dry the kernels, crush the kernels, dry roast the crushed kernels, mill or pounded/grind into a paste, kneaded (water-boiled or pressed) to form an emulsion to separate fats, boil the oil (fat) to dry and clean by decanting to clarify the butter, prepare for use, sale, or storage (cooled oil will congeal into solid white/cream colored butter). The semi-mechanized method involves the use of grinders to take the place of pestle and mortars and these hand operated machinery reduce the amounts of firewood and water required. A nut crusher, roaster, a kneader or a hydraulic/screw press oftentimes complements the manual process and reduces drudgery of the traditional system. Fully-mechanized Shea butter processing method involves the use of – fermentation/parboiling tank, parboiled Shea fruit digester, bed drier, cracker/shell separator, roaster, milling machine, oven, basket oil presser, warehouses and/or chemical solvents to extract the oil. Comparatively, the extraction rate of Shea butter from *Vitellaria paradoxa* using the traditional method is about 20%, 35% to 40% using semi-mechanised method, and 42% to 50% using the fully mechanized method (Addaquay, 2004).

Despite the huge and wide usage, Shea butter being processed in Nigeria is characterized by low quality and quantity. The inefficiency of the processing techniques lowers the quantity of Shea butter available in the market. Shea butter processing in West Africa involves minimum mechanical input, heavy drudgery and high input of firewood, which has a direct effect on the quality of Shea butter (Carette et al, 2009). The low quality of Shea butter is thus a concern, as it falls below international standard. Consequently, demand is decreasing and the potentials of Shea butter in alleviating rural poverty is dwindling, necessitating an assessment of the processing techniques. The following questions were answered by this study.

1. What are selected personal characteristics of Shea butter processors in Atisbo LGA?
2. What are the Shea butter processing techniques utilized in the area?
3. What are the information sources of Shea butter processors in the area?
4. What marketing outlets do Shea butter processors in the area employ?
5. What are the processing constraints of Shea butter in the area?
6. What is the quantity of Shea butter processed in the area?

Hypotheses of the study

Ho1: There is no significant relationship between marketing outlets employed and quantity of Shea butter processed

Ho2: There is no significant relationship between processing techniques used and quantity of Shea butter processed

Methodology

The study was carried out in Atisbo Local Government Area of Oyo state because it is a major Shea butter producing area in the state. Atisbo is a rural Local Government located in the north-west of Oyo state, Nigeria, about 175km from Ibadan, the state capital. Its headquarters is in the town of Tede. The name Atisbo is an acronym of eight rural communities that made up the Local Government. Thus, Atisbo stands for Ago-are and Agunrege, Tede, Irawo, Sabe, Baasi, and Ofiki and Owo communities. It is predominantly agrarian with some mining land where precious stones such as tourmaline and tantalite can be found. There are 10 wards in the Local Government and bounded in the North by Saki East, South by Itesiwaju and Iwajowa, East by Orire and Republic of Benin to the West. It has a population of 110,792 going by the 2006 National Population Census. Among the cash crops widely grown include cashew, Shea butter and mango.

The population for the study comprised all Shea butter processors in Atisbo Local Government Area of Oyo State. Multistage sampling procedure was used. Forty percent of the 10 wards were randomly selected to give a total of 4 wards. Each ward in the local government consists of an average of 20 communities and 40% of the communities were selected to make a total of 6 communities per ward. A snow ball sampling technique was then used to generate 5 Shea butter processors from each of the community to give a total of 120 respondents. The data for the study were collected through interview schedules with the Shea butter processors. The data collected were analyzed using both descriptive (frequency counts, percentages, and means) and inferential statistics (chi-square and PPMC). The independent variables for the study include selected personal characteristics, information sources, marketing outlets, processing techniques, and processing constraints. The dependent variable is Shea butter quantity processed.

Results and Discussion

Personal Characteristics of Shea Butter Processors

Age is a crucial factor in agricultural production, as young, active and virile farmers are expected to be more productive than old farmers. Table 1 shows that 40.6% of the processors are between ages 56 and above, implying that weak labour and probable laggards dominate Shea butter processing. Most (82.5%) of the processors are married indicating that they have responsibilities of their households to meet. The predominance of married processors suggests that they are deriving some form of support from family members. Chalfin (2004) opined that education is a variable that determines the ability of a respondent to access and understand information. Result shows that majority (44.2%) have no formal education, inferring illiteracy and difficulties in accepting innovation. On the other hand, the productive activities of males and females in agriculture are very important and must be taken into consideration. Majority (96.7%) of the processors are female, corroborating Cocoa Research Institute of Ghana (2007) that women are more involved in the processing of Shea butter. Household size implies the total number of people staying under a

roof and being fed. Higher number of children is an indication of family wealth in rural areas. Children are an added labour advantage for increased agricultural productivity because they do bulk of the farm work, 60.7% of the processors have between 7-10 household, which should result in increased production. Majority (81.7%) of the processors have their primary occupation to be Shea butter processing, showing the level of devotion to the vocation in the area.

Table1: Distribution of selected personal characteristics of the processors (N=120)

Variables	Frequencies	Percentages
Age		
≤ 25	2	1.7
26 - 45	33	27.5
46 - 65	80	66.7
≥ 65	5	4.1
Sex		
Male	4	3.3
Female	116	96.7
Marital Status		
Single	9	7.5
Married	99	82.5
Divorced	5	4.2
Widowed	7	5.8
Educational Attainment		
Non Formal	53	44.2
Arabic	14	11.6
Primary	29	24.2
Secondary	21	17.5
Tertiary	3	2.5
Household Size		
3-6	28	23.3
7-10	73	60.8
11-14	19	15.8
Primary Occupation		
Shea Butter Processing	98	81.7
Others	22	18.3

Source: Field Survey, 2011

Processing Techniques of Shea Butter Processors

The processing techniques in table 2 are the ones found in practice in the study area. Every one of the processors harvest fruits themselves implying no division of labour. The hygiene practices in the processing is low, as the processors have little hygienic attitude, with 95.8% of them not washing the fruits before eating/de-pulping. Drying of seeds take a number of days, as the processors always have seeds being dried every day. Only the healthy seeds should be used in processing, but 30.0% of the processors do not select the best of seeds, but use all. About 6.0% of the processors crack the seeds with machine and not manually, showing the low level of mechanization in the process. Roasting, milling, boiling, and cold water mixing are done averagely either twice a month or once a week. Seventy seven point five percent of the processors do not do cold water separation, meaning that there is unacceptable moisture content in the finished product. Filtration, solidification, packaging, and standardization are fairly done once a week, twice a month, or once a month. Result shows the tedious nature of Shea butter processing, corroborating (Carette et al, 2009).

Table 2: Distribution of processing techniques of the Shea butter processors (N=120)

S/No	Processing Techniques	No (%)	Yes (%)				
			Once a Month	Twice a Month	Once a Week	Twice a Week	Daily
1	Picking of fruits	-	-	0.8	1.7	95.8	1.7
2	Washing of fruits	95.8	-	0.8	1.7	1.7	-
3	De-pulping	3.3	-	4.2	21.7	57.5	13.3
4	Drying of seeds	0.8	-	0.8	3.3	8.3	86.7
5	Seed selection	30.0	2.5	14.2	21.7	15.8	15.8
6	Seed cracking by hand	5.8	9.2	23.3	43.3	10.8	7.5
7	Seed cracking by machine	-	33.3	30.0	34.2	1.7	0.8
8	Roasting of kernels	-	26.7	32.5	35.8	3.3	1.7
9	Milling of kernels	-	27.5	35.8	38.5	0.8	-
10	Boiling of grounded kernels	7.5	25.0	31.7	34.2	1.6	-
11	Kneading into dough	-	29.2	33.3	36.7	0.8	-
12	Cold water mixing	1.7	27.5	35.0	35.0	0.8	-
13	Cold water separation	77.5	5.8	7.5	9.2	-	-
14	Filtration	-	29.2	36.7	33.3	0.8	-
15	Solidification	-	29.2	36.7	33.3	0.8	-
16	Packaging	-	33.3	29.2	36.7	0.8	-
17	Standardization	-	29.2	33.3	36.7	0.8	-

Source: Field survey, 2011

*Multiple Responses

Shea Butter Processor s' Marketing Outlets

Table 3 shows that marketing to wholesalers and retailers occur majorly (77.5% and 68.3% respectively) once a week. Consumers in the community hardly constitute part of the market, as Shea butter processing is an art known to almost all in the community; those that do not produce for the market produce for personal consumption. Also, there is little direct trade of the product as 70.0%, 99.2%, 65.8% of the processors do not sell to consumers outside their communities, food companies in cities, and cosmetics companies in cities respectively. None of the processors sell to traditional hospitals because the latter produces what it requires and they neither sell internationally. There is either little sensitization of the public and industries of the efficacy of Shea butter or distrust in its quality, as also opined by Hayes and Lence (2004).

Table 3: Distribution of respondents' marketing outlets (N=120)

S/No	Marketing Outlets	No (%)	Yes (%)				
			Once a Month	Twice a Month	Once a Week	Twice a Week	Daily
1	Wholesalers	5.0	16.9	-	77.5	-	0.8
2	Retailers	2.5	26.7	1.7	68.3	0.8	-
3	Consumers within community	89.2	3.3	0.8	4.2	-	2.5
4	Consumers outside communities	70.0	9.2	-	20.8	-	-
5	Food companies in cities	99.2	-	-	0.8	-	-
6	Cosmetics companies in cities	65.8	25.8	-	8.3	-	-
7	Traditional hospitals	100.0	-	-	-	-	-
8	Exports	100.0	-	-	-	-	-

Source: Field survey, 2011

*Multiple responses

Shea Butter Processors' Preferred Sources of Information

Radio still stands as the most preferred information sources in rural communities as opined by Oladeji et al (2011). The best way extension can remain relevant to rural dwellers is by adopting radio as the major channel of information, as ruralites will not go out of their way to seek information from extension. Result shows that Shea butter processors place little importance on information as a major resource in improving both their processing techniques and productivity, which can be explained to be due to their limited commercialisation.

Table 4: Distribution of processors' preferred information sources (N=120)

Information Sources	Frequencies	Percentages	Preferred
Radio	63	52.5	1 st
Television	32	26.6	2 nd
Extension agent	9	7.5	3 rd
Video	8	6.7	4 th
Newspaper	3	2.5	5 th
Handbill	3	2.5	5 th
Postal	2	1.7	7 th

Sources: Field Study, 2011

Shea Butter Processors' Constraints

Majority of the processors responded that inadequacy of credit is a very severe constraint in Shea butter production as it is often the case among rural practitioners as submitted by Oyesola et al (2010). Table 5 indicates that Shea butter nuts are in abundant supply in the area, but limited processing equipments is a constraint that limit both quality and quantity of Shea butter available for the market. Shelf life of Shea butter is not a constraint, because it last for a long time; and labour is also not a constraint, as household labour is sufficient. Processors do not have need for storage facilities, and unfortunately do not see a need for efficient information, as they do not regard it as a resource in their activity.

Table 5: Distribution of Shea butter processors' constraints (N=120)

Constraints	No (%)	Yes (%)		
		Not Severe	Severe	Very Severe
Inadequate credit facilities	1.6	6.7	24.2	67.5
Limited supply of nuts	93.3	3.3	1.7	1.7
Inadequate transportation facilities	29.2	5.8	25.0	40.0
Limited processing equipments	9.2	2.5	18.3	70.0
Shelf life of Shea butter	97.5	0.8	81.6	-
Increased competition among processors	30.0	9.2	25.0	35.8
Low demand	74.2	10.8	10.0	5.0
Limited labour	94.2	3.3	2.5	-
Inadequate storage facilities	100.0	-	-	-
Processing drudgery	-	5.0	15.8	79.2
Limited information	100.0	-	-	-

Source: Field survey, 2011

Quantity of Shea butter produced

Table 6 reveals that 90.8% of the processors produce between 21kg and 40kg of Shea butter a month, given 252kg to 480kg per annum. This implies that there is a large room for increase in production, reinstating Bonkougou (2005) that it cost too much to produce, so only little can be produced, given that Shea butter nuts are in abundant supply as shown in table 5

Table 6: Distribution of Shea butter processors' production (N=120)

Quantity of Shea Butter Processed per Month	Frequency	Percentage
Below 10kg	2	1.7
11-20kg	6	5.0
21-30kg	70	58.3
31-40kg	39	32.5
41-50kg	2	1.7
Above 50kg	1	0.8

Source: Field survey, 2011

Testing of Hypotheses

Hypothesis One (Ho1): There is no significant relationship between marketing outlets and Shea butter production. Result in table 7 shows that Shea butter quantity produced is not dependent on the available marketing outlets. This implies that the processors produce for personal consumption and put the remaining up for market; or they already produce at maximum capacity and the market is not enough to motivate them to produce more.

Table 7: PPMC results of correlation

(N=120)

Variables	r-value	p-value	Remark	Decision
Marketing outlets / Quantity produced	0.100	0.277	Not Significant	Accept Ho1
Processing techniques / Quantity produced	0.010	0.917	Not Significant	Accept Ho2

Source: Field Study, 2011

Hypothesis Two (Ho2): There is no significant relationship between processing techniques and Shea butter production. Table 7 reveals that quantity of Shea butter produced by the processors is not a function of their processing techniques. This suggest that the processors are very accustomed to the drudgery involved in Shea butter processing, that it does not affect their level of production. It also implies that Shea butter processors do not put extra effort to produce more, indicating a comfortable status quo.

Conclusion

It is concluded that the Shea butter processors are mainly females, middle aged, married, with no formal education, have large household size, and have Shea butter processing as their primary occupation. The processing techniques are manual, take time, and highly demanding. There are limited market opportunities for the product, and the processors hardly seek information to improve their activity. Moreover, limited credit facilities and processing equipments are the major constraints of the processors. Shea butter production in the area is lower than expected, as it is their primary livelihood activity. Finally, the quantity of Shea butter produced is neither affected by available markets, neither the processing techniques.

Recommendations

It is recommended that Shea butter processing should be adopted by both governments and NGOs as a poverty alleviation initiative, given its enormous potentials locally and internationally. Federal government should curb importation of beverages and cosmetics to enable local industries increase their demand for Shea butter as raw material. This will lead to mechanisation and commercialisation of the sub-sector. National Shea butter Association of Nigeria (NASPAN), National Agency for Food, Drug, Administration and Control (NAFDAC), and Standards Organization of Nigeria (SON) should synergize to ensure Shea butter quality for international market. Extension should help locate Shea butter markets and motivate processors to meet specifications. The value-addition to the profession will also encourage young, energetic and dynamic youths to it, which will promote rural development and encourage urban-rural migration.

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