



Evaluation of Cost-benefit Disparity of Butter Production in Nigeria

Arthur Odebia, Jojo Oyekala ¹

Department of Agricultural Extension, University of Ibadan, Nigeria

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Abstract

Presupposing the cost-benefit disparity of shea butter production in rural inhabitants of Atisbo Local Government Area in Nigeria this study aims at evaluating this production process. The research population includes all shea butter processors in the Oyo State. The 120 respondents of the study were selected by multistage sampling procedure. Results show that the Shea butter processors are mainly females, married, middle-aged and have no formal education. Their families are large and Shea butter processing is their main job. Whilst Shea butter processing techniques are manual and require lots of time and effort. There is a small market opportunity for the product and these processors barely look for information to enhance their work. Moreover, the major constraints they deal with are bounded credit facilities and processing instruments. Finally, we conclude that Shea butter production in the aforementioned area is less than expected and the quality of the products is poor. We suggest that governments and NGOs can enhance Shea butter processing and use it as a mean of poverty alleviation as it has a considerable economical potential.

Keywords: Butter; Cost-Benefit; Process; Production

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1. Introduction

Shea butter tree is aboriginal to Sub-Saharan Africa and is a member of the Sapotaceae family. It grows in the wild and can be economically and ecologically profitable. As it is rather rich in Vitamins A, E and F [1], it has numerous uses for household purposes (such as cooking or as a skin lotion) and commercial purposes (It can be used in cosmetic, pharmaceutical and edible products) [2]. The fruit is edible when it's very ripe. A couple of traditional uses can be enumerated for Shea butter: Skin protection from sun, rheumatic pain killer, wound healing, hair cream and massage lotion. It is also used to treat rashes, burns, eczema, dermatitis and ulcers. According to Lovett (2004) Shea butter is a profitable export to Europe and the United States. Maranz and Wiesman (2003) suggest that at least 500 million production trees exist in West Africa, which equates to a total of 2.5 million tons of dry kernel per annum (based on 5 kg dry kernel per

tree). According to them more than two million people in 13 African countries process Shea butter for money and consumption. Shea butter is mostly processed manually in small villages in Nigeria. Shea butter processing is done by female village dwellers, and their method has been handed on by older generations. Furthermore, no cost-benefit analysis of Shea butter processing has been performed, however the process is not only taxing, labour-intensive and time consuming, it also demands large amounts of water and firewood. With the traditional processing it takes one person 20-30 hours, from collection to final product to produce 1Kg of Shea butter [5]. It is also reckoned that 8.5-10.0kg of fuel-wood is required to produce 1kg of Shea butter.

The traditional method includes the following steps: 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

¹ Corresponding author email: j.oyekala@yahoo.com

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 consists of the use of grinders to take the place of pestle and mortars and these hand operated machinery reduce the amounts of firewood and water needed. 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* paradox using the traditional method is about 20%, 35% to 40% using semi-mechanized method, and 42% to 50% using the fully mechanized method [6]. Shea butter despite its widespread use is being processed in Nigeria with a low quality and in a small quantity. The inefficiency of the processing techniques decreases the quantity of Shea butter accessible in the market. Shea butter processing in West Africa includes minimum mechanical input, heavy drudgery and high input of firewood, which influences the quality of Shea butter directly [7]. Thus the low quality of Shea butter is of consideration, as it falls below international standard. Accordingly, the decrease in demand and the potentials of Shea butter in reducing rural poverty is diminishing, making an evaluation of the processing techniques necessary. The questions of this study were the followings:

- 1) What are the respondents' characteristics?
- 2) What are the Shea butter processing techniques used 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 limitations of Shea butter in the area?
- 6) What is the quantity of Shea butter processed in the area?

1.1 Study's hypotheses

Ho1: No significant relationship exists between marketing outlets utilized and the amount of Shea butter processed.

Ho2: No significant relationship exists between processing techniques employed and the amount of Shea butter processed.

2. Methodology

This research was executed in Atisbo Local Government Area of Oyo state because it is a prominent 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 research population included all Shea butter processors in Atisbo Local Government Area of Oyo State. Multistage sampling procedure was employed. 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 interviewees. 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 involve respondents' characteristics, information sources, marketing outlets, processing techniques, and processing limitations. The dependent variable is the amount of Shea butter processed.

3. Results and Discussion

3.1 Personal Characteristics of Shea Butter Processors

In agricultural production age is an essential factor, as young, active and virile farmers are expected to be more productive than old farmers. Table 1 indicates that 40.6% of the respondents age 56 and above, meaning that inefficient labour overshadow Shea butter processing. Most (82.5%) of the respondents are married implying that they have duties of their households to take care of. The prevalence of married processors indicates that they are getting some sort of support from family members. Chalfin (2004) stated that education is a factor that determines the capability of a respondent to access and understand information. Result reveals that majority (44.2%) have no formal

education, suggesting illiteracy and difficulties in accepting innovation. On the other hand, gender-based productive activities in agriculture are very important and must be taken into account. Majority (96.7%) of the processors are female, confirming Cocoa Research Institute of Ghana (2007) that women engage more in the processing of Shea butter. Household size indicates the total number of people living together in a house and being fed. Higher number of children implies the family wealth in rural areas. Children are an added labour advantage for increased agricultural productivity because they perform most of the farm work, 60.7% of the respondents have between 7-10 household, which should bring about more production. Shea butter processing is the main job of the majority (81.7%) of the respondents, indicating how earnest they are in their occupation.

3.2 Processing Techniques of Shea Butter Processors

The processing techniques in table 2 are the ones found in practice in the study area. No division of labour takes place in fruit picking as everyone harvests fruits for themselves. 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 takes a couple 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. 77.5 % 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. In accordance with Carrette et al. (2009) result indicates the taxing nature of Shea butter processing.

3.3 Shea Butter Processor's Marketing Outlets

Table 3 shows that marketing to wholesalers and retailers often takes place (77.5% and 68.3% respectively) once a week. Consumers in the community are not a part of the market, as all the dwellers know how to process Shea butter; they would produce for personal consumption, if not for the market. Also, there is little direct trade of the product as 70.0%, 99.2%, 65.8% of the respondents do not sell to consumers outside their communities, food companies in cities, and cosmetics companies in cities respectively. None of the respondents sell to traditional hospitals because they produce what they need and they neither sell internationally. The

public and industries have little knowledge of the potency of Shea butter or doubt its quality, as also stated by Hayes and Lence (2004).

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4.3 Shea Butter Processors' Preferred Sources of Information

According to Oladeji et al. (2011) radio is still the most preferred information sources in rural areas. Still the most accessible information channel for rural dwellers is the radio, as they won't look for information on their own. Result indicates that Shea butter processors do not consider information as a major resource in enhancing both their processing techniques and productivity, which can be explained to be a result of their restricted commercialization.

4.4 Shea Butter Processors' limitations

Majority of the respondents consider the inadequacy of credit as a serious limitation in Shea butter production and this often holds true among rural dwellers as stated by Oyesola et al. (2010). Table 5 shows that Shea butter nuts supply is very high in the area, but insufficient processing instruments 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 lasts for a long time; and labour is also not a constraint, as household labour is sufficient. Processors do not need storage facilities, and unfortunately do not see a need for efficient information, as they do not regard it as a resource as of their performance efficiency.

4.5 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. Knowing that Shea butter nuts are in abundant supply as shown in table, one can tell that an increase in production is possible. As Bonkougou (2005) suggested it costs too much to produce, so only little can be produced.

4.6 Testing of Hypotheses

Hypothesis One (Ho1): There is no significant relationship between marketing outlets and Shea butter production. Result in table 7 shows that the amount of the Shea butter produced does not depend 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.

Hypothesis Two (Ho2): There is no significant relationship between processing techniques and Shea butter production. Table 7 shows that the amount of the Shea butter produced by the

processors is not a result 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.

5. Conclusion

It is concluded that the Shea butter processors are mainly females, middle aged, married, with no formal education, have large household size, and Shea butter processing is their main job. The processing techniques are manual, time consuming, and sever. There are bounded market opportunities for the product, and the processors hardly look for information to enhance their activity. Moreover, limited credit facilities and processing equipment are the major limitations of the processors. Shea butter production in the area is lower than expected, as it is their primary livelihood activity. Finally, the amount of Shea butter produced is neither affected by available markets, neither the processing techniques.

Recommendations

Given that Shea butter processing has considerable economical potentials it should be deployed by both governments and NGOs as a poverty alleviation initiative. Federal government should restrain importation of beverages and cosmetics to enable local industries increase their demand for Shea butter as raw material. This will lead to mechanization and commercialization 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.

References

1. Okullo, J. B. L., F. Omujal, J. G. Agea, P. C. Vuzi, A. Namutebi, J. B. A Okello and S. A. Nyanzi. 2010. Physico-chemical characteristics of Shea butter (*Vitellaria paradoxa* C.F. Gaertn.) oil from the Shea districts of Uganda. *Africa Journal of Food, Agriculture and Nutrition Development*, 10: 2070-2084.
2. Alander, J. 2004. Shea butter – a multifunctional ingredient for food and cosmetics. *Lipid Technology*, 16(9): 202-205.
3. Lovett, P. N. 2004. The Shea butter value chain: production, transformation and marketing in West Africa. *West Africa Trade Hub (WATH) Technical Report No. 2*. US-AID West Africa Program.

4. Maranz, S. and Z. Wiesman. 2003. Evidence for indigenous selection and distribution of the Shea tree, *Vitellaria paradoxa* (Gaertner), and potential significance to prevailing parkland savanna tree patterns in sub-Saharan Africa north of the equator. *Journal of Biogeography* 30(10): 1505–1516.
5. Bonkoungou, E. G. 2005. The Shea tree (*Vitellaria paradoxa*) and the Africa Shea parklands. Proceedings of the international workshop on processing and marketing of Shea products in Africa, Dakar, Sénégal, 4-6 March 2002. Roma: FAO, CFC Technical Paper No 21:51-59.
6. Addaquay, J. 2004. The Shea butter value chain: refining in West Africa. *West Africa Trade Hub (WATH) Technical Report No. 3*. Washington, DC: USAID.
7. Carette, C., M. Malotaux, M. Leeuwen and M. Tolkamp. 2009. Shea nut and butter in Ghana opportunities and constraints for local processing. *Hans Eenhoorn and Resilience Foundation*. pp: 6-8.
8. Chalfin, B. 2004. *Shea Butter Republic: state power, global markets, and the making of an indigenous commodity*. New York, USA: Routledge
9. Cocoa Research Institute of Ghana (CRIG). 2007. *Research and development of the Shea tree and its products*. http://www.solutions-site.org/cat11_sol119.htm (Accessed 21/9/2011).
10. Hayes, D.J. and S.H. Lence. 2004. Farmer-Owned Brands. *Agribusiness* 20: 269-285.
11. Oladeji, J. O., O. B. Oyesola, K. Y. Ogunleye and K. Raji. 2011. Agricultural Information Needs of Root and Tuber Farmers in the Atisbo Local Government Area of Oyo state, Nigeria. *Journal of Agriculture and Food Information*, 12(2): 199-205.
12. Oyesola, O. B. and T. S. Kadiri. 2010. Effects of Rural Urban Interaction on Socio – Economic Status of Rural Dwellers in Oyo State, Nigeria. *Global Approaches to Extension Practice*, 6(2): 1-10.