

Socio-Economic Contribution of Shea Tree (*Vitellaria paradoxa*) in Support of Rural Livelihood in Ganye, Southeastern Adamawa State, Nigeria

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Abstract: *Vitellaria paradoxa* is an important economic tree that plays a vital role in support of rural livelihood in an area where its uses are well understood. This study was conducted to examine the socio-economic contribution of *Vitellaria paradoxa* in support of rural livelihood in Ganye, Adamawa State, Nigeria. One hundred and fifty (150) respondents were randomly selected for the study. Majority (63%) of the respondents engaged in Shea butter enterprise were women. The result indicated that about 76% of the respondents had no formal education, 53% pointed out that their primary occupation is Shea butter processing even though they are also involved in other form of activities in order to diversify their economy. The result shows that 67% of the respondents often picked Shea fruits under trees which they use as input, 27% maintained that they both picked and also buy more Shea nuts from pickers. The quantity of Shea nuts picked per day varied from ¼ to 1 bag per day (77%), 2-4 bags (17%) and 5-8 bags (3%) per day. Also majority (73%) of the respondents use manual method for Shea butter processing, (23%) mentioned that they use mechanized method of processing. All the respondents in the study area maintained that Shea trees play vital role in support of rural livelihood. 60% of the respondent's mentioned that the major challenges encountered are lack of processing equipment, technical skills, low inputs and capital. About 90% of the respondents mentioned that they do not use to get any assistant from government or non-governmental organization. When the respondents were asked on how these challenges could be addressed? About 90% of them maintain that government should provide the input, equipment and also provide modern training to enhance their local skill.

Keywords: Livelihood, Poverty, Shea nuts, Women, Economy, Rural

I. Introduction

According to Agbogidi (2010), households world over depends on natural resources in order to meet a large number of their basic necessities. The types of resources and utilization pattern vary with ecological zone and socio-cultural area. Agbogidi and Eshegbeyi (2008) maintained that forest provides a wide range of benefits at both the local, national and global levels. *Vitellaria paradoxa* C.F Gaertn. (Sapotacea) commonly called Shea tree is one of the trees mostly exploited by rural women in the Shea butter enterprise. The tree is a characteristic species in Sudano Sahelian Savanna in Africa. The different parts of the tree are usually employed in various field of the everyday life. The wood of Shea tree is used for making tools while the roots and bark have medicinal and pesticide applications. The sweet pulp of its fruits represents a valuable source of energy during the early part of the rainy season. The butter extracted from the kernels is the most important product of Shea tree. It is frequently used for local domestic purposes such as cooking, lighting, in soap manufacture or as skin moisturizer, as well as in traditional medicine (Hall et al., 1996). Economic interest of Shea tree had leads the scientists to be interested in the plant. The Shea nuts are important non-timber forest products that play major role in enhancing rural welfare and in supplying urban and industrial markets as well as in the inputs for rural economics (Adekun et al., 2002). Agbogidi and Okonta (2003) pointed out that a large proportion of rural population earns their livelihood from the extraction and sales of Shea nuts products thereby improving the quality of life and standard of living of rural population.

The West African region is currently the dominant supplier of all the African nations that produce Shea nuts. Nigeria and Mali are the leading producers, followed by Burkina Faso and Ghana. There is an estimated 500 million productive Shea trees in the Sahel region, with production capacity of approximately 2.5 million M.T. The majority of Shea butter is constituted into several different products: cooking oil (mainly in Africa), candle making, cosmetics (soaps, moisturizer creams emulsion, and hair conditioners), pharmaceuticals (ointments anti-inflammatory), and food (Supplement for cocoa butter, in pastries ice creams).

The Shea butter industry is mainly driven by the work of women across West African. Women collect the Shea nuts extract the butter and sell the refined product. It was estimate that the Shea tree provides more than half of a Women's incomes in the Sahel regions, and there are over two million Women working directly or indirectly with Shea trees.

Women are the main drives behind the production of Shea butter and Shea tree is seen as sacred. Women's income in West Africa for most part is directly related to the production of Shea butter. Therefore any direct impact to the Shea tree, such as using it for charcoal production or fire wood, threatens one of the main income generators for women.

Men totally exclude themselves from the act due mainly to non-recognition of the Shea butter industry potential to help the economy and women have their own limitation of complex including lack of access to key factors of production, lack of appropriate funding, and high level of domestic work. Others are inadequate modern technologies, under-developed markets and lack of storage facilities. Reliance on low level of technology input is inadequate to lead to desired rapid and sustained increases in the contribution and utilization of Shea tree. Lack of substantive information on the economic values of Shea trees has undermined their contribution to the national gross domestic products (Agbogidi and Ofuoku, 2005). Agbogidi (2010) maintained that strengthening the local people's capacity to adopt sound and sustainable agro forestry practices such as retaining of economic trees on farmland can remarkably increase profit of rural farmers. On the other hand, availability of Shea trees could be enhanced through enrichment planting.

In a previous study conducted by Lovett (2004), he pointed out that stakeholder's involvement in the Shea butter processing business includes village pickers and post harvest processors of Shea nuts, local buying agents, rural or urban Butter processors. Types of Shea butter processing technologies in West Africa including Nigeria, Shea butter extraction processes is categories into three main methods. Traditional, semi mechanized and fully mechanized industrial systems (Addaquay, 2004).

Hall et al., (1996) estimated that the production 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. Extraction rates are also low at about 25-60%.

Attempts have been made to introduce new technologies in to the gathering, storage and processing of Shea butter (Wallace-Bruce, 1995). The semi-mechanized system of extraction utilizes appropriate technology to mechanize some of the unit operations of the manual traditional systems. According to addaquay (2004), such technological advancement has led to an increased in extraction rate from 20 percent to 35-40 percent (referred to as the semi-mechanized system). The semi-mechanized system could be very suitable for a developing country like Nigeria; as a result further research ought to be conducted to promote extensive use of the semi-mechanized system in Nigeria

Fully mechanized system of production in view of addaquay (2004), mechanized processing in West Africa yields 30-40% of Shea butter from raw nuts, but more efficient, fully mechanized system achieve extraction rates of between 42% and 80% this is relatively higher compared with 25%-60% of extraction rate of the traditional and semi-mechanized systems. Addaquay (2004) again state that, most of the Nigeria plants produce less than 25% of their installed capacity and operates only six months in a year or order to offset the high cost of storing Shea nuts throughout the year. A further research must however be carried out to find out economic approach for storing Shea nuts in Nigeria to enable processing plants function all year round. Besides studies into crude Shea butter storage possibilities could reduce the higher cost of storing Shea nuts in Nigeria.

Contribution of Shea Butter Industry to Development in Nigeria

The Shea butter industry is a good source of socio-economic development for northern Nigeria and the entire nation as a whole. The main benefits of Shea butter to Nigeria include foreign exchange, food security, employment generation, poverty alleviation among others. According to techno serve (2004) about 3,000 household in Northern Nigeria are engage in the Shea industry, it is estimate that the average household size is 13 people and these household produce and market 4 million (USD) worth of Shea butter annually.

Hall et al. (1996) noted that the harvest season of Shea nuts coincides with the early wet season, and the edible fruit pulp forms a substantial addition to diet. About 70,000 MT of Shea butter is consumed in Nigeria annually (Lovett, 2004). However, the most important role played by Shea in northern Nigeria is the fact that Shea picked by farmers are mainly sold to raise funds for the purchase of food. As stated by kletter (2002), picking of Shea fruits coincides with the hunger period in northern Nigeria, therefore, pickers sell the commodity immediately to purchase much needed food.

Literature on the Shea industry stresses that the industry is dominated by women. Moreover, women are among the most vulnerable and the poorest in society. Majority of them that are engaged in the Shea industry for instance, do so because of the potential of the industry to reduce poverty levels among women in particular. It is argued that all artisanal Shea butter producers are women (Techno serve 2004). Financing the production and marketing of the Shea industry is therefore an important course for development. The Shea processing is dominated by women and therefore contributes to significant proportion of their income. Women are therefore, empowered economically through their engagement in the industry. Therefore, reliable evaluation of Shea nut processing to the socio-economic development of the rural populace is very important.

II. Materials And Methods

The study area

The study was carried out in Ganye Local Government area, located in the Southeastern part of Adamawa State (Longitude 12°N, Latitude 09°E) Figure 1. It is bounded by Jada to the North, Mayo-Belwa and Taraba State to the West, Toundou to the South and to the East Cameroon Republic (Adebayo, 1999). It has a land mass of 2291.42km² and a population of 164,087 (NPC, 2007). The mean annual temperature of the study area is 26.7°C and the mean annual rainfall ranges between 1000mm and 1600mm with a distinct dry season which begins in November, and ends April and the wet season begins in April and ends in October or sometimes in November. The area is located within the Guinea Savannah Zone of the Nigeria's vegetation Zones (Adebayo 1999). The major economic activity in the area is agriculture, food crops grown in the area includes Maize, sorghum, cowpea, Cassava and Potatoes. While Cash crops such as Ground nuts, Rice, Yam and Sugarcane are produced in large quantities. The farmers are also engaged in collection and processing of non-timber forest such as Shea nuts. Major livestock reared in the Zones are cattle, sheep and goats (Ad seeds, 2004).

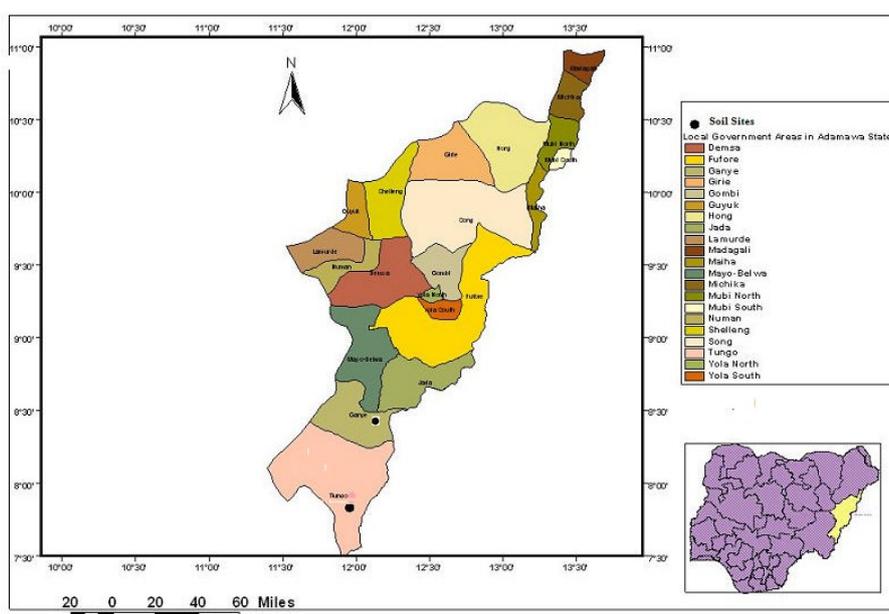


Figure 1: map of Adamawa State, Showing the Study Area

Methods of data collection and analysis

Data were collection from the communities involved in the use of non-timber forest products. A total of one hundred and fifty (150) respondents were sampled which translated to fifty (50) respondents per community. Main data in the questionnaires includes- relevant Socio-economic status of respondent's, Livelihoods activities, types of equipment use for Shea butter processing and market availability. The questionnaires completed were retrieved, coded and subjected to descriptive statistical analysis.

III. Results and Discussion

Socio-economic Characteristics of the respondents

The result in Table 1 indicates that 63.3% of the respondents are female and 36.7% are male. This shows that Shea butter enterprise in the study area is mostly dominated by female, even though 36.7% of the males are also involved in the enterprise. The possible reasons might be due to the nature and operations involved in the production processes and hence less participation of the men folks. Some researches (Awono et al., 2010 and Hossain, 2008) have reported a growing involvement of women in non timber forest products enterprise than men. They further maintained that this enterprise offer great opportunity for women, most especially in the informal economic in order to enhance the effectiveness of Shea butter enterprise in support of rural livelihood, greater involvement of women are essential particularly in high technology processing. 63.3% of the respondents are within the age range of 30-40 years, representing the active part of the population engaged in Shea butter enterprise while, 26.7% are within the age range of 41-50 years (Table 1). A good number of the respondents (73.3%) are married and 23.3% are still single (Table 1). This suggest that Shea butter enterprise in the study area is mostly associated with the married individuals and it is also likely that they engaged their family members in picking of Shea fruits and hence making the enterprise relatively simple in

operation. In the aspect of education, 76.7% of the respondents had no formal education. Nevertheless, 6.7% and 16.7% of the respondents had primary and secondary education respectively. This indicates that Shea butter enterprise in this area is mostly dominated by the respondents who had no formal education but depends on their local skills in Shea butter processing. Nevertheless, Shea butter enterprise can be integrated within the on-going skill acquisition training in order to enhance the productivity capacity of the rural people. It will provide the possibilities for many existing rural enterprise to get involved not only in protecting Shea trees, but also planting, processing, packaging and marketing of Shea butter. According (Chigbu et al, (2012), this could lead to more direct employment generation, better economic empowerment and well being of the rural populace.

Steian (2003) pointed out that education is one of the important human capitals which play important roles in determining status in society. Education is expected not only to contribute to people's ability to read and understand instructions but also help them to adopt new techniques.

The lack of formal education among Shea butter processors may limit their ability to adopt modern processing techniques and marketing.

In the case of primary occupation of the respondents, 53% are Shea butter processors (Table 1), about 43% had farming/Shea butter processing as their primary of means of livelihood. **Livelihoods Activities**

Table 2 indicates that 53.3% of the respondents are not full time Shea butter processors, but on the other side 46.7% mentioned that Shea butter enterprise remains one of their major occupations in support of livelihood. Almost all the respondents (100%) indicated that they are also engaged in other form of business in order to diversify their sources of income to enable them maintain livelihoods security.

Most of the respondents (76.7%) mentioned that they were engaged in Shea butter enterprise for about 5-10 years, 13.3% for 11-15 years and 10% for about 26 years and above (Table 2). This shows that even though majority of the respondents had no formal education, but in the process of constants use of the traditional methods in Shea butter processing, a high skill can be acquired in the enterprise.

Sources and Methods of Shea Butter Processing

Table 3 indicates that 66.7% of the respondents picked Shea fruits under Shea trees, 26.7% maintained that they both picked and buy more fruits from sellers and 6.7% indicated that they buy fruits from pickers. This finding corroborate with the study conducted by hall et al, (1996), that Shea nuts remained a picking products in Shea butter processing. The respondent's mentioned that the quantity of Shea fruits picked varies, 76.7% indicates that they normally picked quarter to 1 bag per day and 16.7% maintained that they usually picked 2-4 bags per days. Only 3.35% indicate that they picked 5-8 bags and more than 10 bags per day respectively (Table 3). This means that the quantity of Shea fruits picked per day is relatively small, this could either be due to scarcity of Shea trees (as a result of tree felling for other uses), or low productivity of the available species. The methods of processing employed by the respondents also varied. 73.3% of the respondents employed manual method of processing, 23.3% uses mechanize and 3.3% semi-mechanize methods respectively (Table 3). This revealed that Shea butter processing is still low.

Marketing and seasonality of Shea butter

Marketing is the sum total of all business activities involved in the movement of commodities from production to consumption. It is the method of bringing the impersonal forces of demand and supply together irrespective of the location of the market (Adekanye, 1988). Arene (1998) defined market as an area or setting in which price making forces (demand and supply) operate. Marketing according to Nwokoye (2000) is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchange that satisfy individual and organisational objectives. It involves the provision of time, form, place and possession utilities of commodities. Reddy *et al* (2004) defined marketing as the economic process by which goods and services are exchanged between the producers and the consumers and their values determined in terms of money prices.

Shea butter marketing as explained by the respondents in the study area was based on: retailing, as mentioned by 43.3% of the respondents, 40% are involved in whole selling and 16.7% are both whole sellers and retailers (Table 3). 83.3% of the respondents maintained that the production of Shea butter is not all year round, 16.7% mentioned that they do maintain their production all year round. The findings of this study revealed that the processing of Shea butter is mostly a seasonal enterprise. This could either be due to scarcity of input (Shea nuts) or lack of technology that could enhance sustainable production. 60% of the respondents maintained that there is market availability for Shea butter in the study area. This means that Shea butter enterprise when encourage can be use as a means to support rural livelihoods.

At the same time 90% of the respondents maintained that availability and supply of Shea butter is mostly around May-August (Table 3). This shows that availability of raw materials (Shea nut) is mostly within this period. The lean period of Shea butter according to the respondents (50%) was between January-April, this period is characterized by fall in supply of Shea butter and the price usually move up, 30.5% of the opinion that

September- December remain the period that is marked with fall in supply of Shea butter. This indicates that the price of Shea butter is mostly high around January- April, which could either be due to high cost of input or high demand of the product.

Challenges of Shea Butter Processors

Most of the respondents (90%) pointed out that they do not receive any kind of assistance from government or nongovernmental organization in order to enhance Shea butter processing enterprise (Table 5). 60% of the respondents explained that the major challenges mostly encountered in Shea butter enterprise is that of lack of processing equipment, others (20%) said that they also face some technical and low inputs challenges. Majority of the respondents (90%) are of the opinion that government should provide them with support and also training to enhance their productivity (Table 5). 10% of them added that processing equipment when provided can highly enhance their livelihoods (Table 5).

All the respondents maintained that Shea tree plays a vital role in support of their livelihoods (Table 2). This means that Shea trees in the study areas are important economic plants. 73.3% of the respondents revealed that in order to control the distribution of Shea in their communities, they hinder the cutting of Shea trees and also maintained public awareness concerning the importance of the tree. At the same time the respondents (76.7%) mentioned that they do plant and protect Shea trees on their farms (Table 6). Moreover, the respondents (76.7%) said there is law regarding protection of Shea trees in their community, while 23.3% pointed out that they do not have any idea concerning laws regarding the protection of Shea trees (Table 6). 80.0% of the respondents maintained that sanctioning is one of the penalties used on those who are involved in destruction of Shea trees within the community (Table 6).

IV. Conclusion and Recommendations

Conclusion

Vitellaria paradoxa provide not only an important support for sustainable rural development but also a way for livelihood support and maintaining livelihood security for the rural people. Even through, they are not the main source of income and employment for rural people, they play significant role in the support of livelihood security of the rural poor. It was clear that livelihood diversification, food security, household asset accumulation, employment generation, financial savings are some of the opportunities rural producers and sellers gain from being livelihood in Shea butter enterprise. Nevertheless, a lot of challenges were identified to be working against these potential opportunities. These are mainly the lack of processing equipments capital, technical skills and government support

Recommendations

Provision of economic incentives and technical assistance will facilitate and boost the Shea enterprise in the study area.

Government should support the Shea butter enterprise through skill enhancement program. A deliberate policy should be maintained that will provide public awareness.

Farmers should be encouraged to protect and plant Shea trees on their farms.

Table 1: Socio-Economic Characteristics of the Respondents

Sex	Frequency	N=150	Percentage
Male	55		36.7
Female	95		63.3
Total	150		100
Age (years)			
30-45	95		63.3
41-50	40		26.7
51-60	5		3.3
61-70	10		6.7
Total	150		100
Marital Status			
Married	110		73.2
Single	35		23.3
Widows	5		3.3
Total	150		100
Educational Qualification			
No Formal Education	115		76.7
Primary Education	10		6.7
Secondary Education	25		16.7
Total	150		100
Occupation			
Shea butter Processing	80		53.37
Farming/Shea butter Processing	65		43.33

Craftsmen	5	3.33
Total	150	100

Source: Field Survey (2012)

Table 2: Livelihoods Activities and Contribution of Shea trees

Full time Shea butter processor	Frequency	N=150	Percentage
Yes	70		46.7
No	80		53.3
Total	150		100
Engaged in other Business			
Yes	150		100
No	0		0
Total	150		100
Years of Experience			
5-10	115		76.7
11-15	20		13.3
26 and above	15		10.0
Total	150		100
Contribution of Shea trees			
Yes	150		100
No	0		0
Total	150		100

Source: Field Survey (2012)

Table 3: Sources and Methods of Shea Butter processing

Source of Shea nuts	Frequency	N=150	Percentage
Picking of Shea fruits under trees	100		66.7
Picking and Buying of more fruits	40		26.7
Buying of fruits from Pickers	10		6.7
Total	150		100
Quantity of Shea fruits Picked/day			
¼-1bag	115		76.7
2-4bags	25		16.7
5-8bags	5		3.3
>10bags	5		3.3
Total	150		100
Method of Shea butter processing			
Manual	110		73.3
Mechanize	35		23.3
Semi-mechanize	5		3.3
Total	150		100

Source: Field Survey (2012)

Table 4: Marketing and Seasonality of Shea butter

Marketing method	Frequency	N=150	Percentage
Whole sales	60		40.0
Retailing	65		43.3
Whole/Retailing	25		16.7
Total	150		100
Seasonality of Shea Processing			
Yes	25		16.7
No	125		83.3
Total	150		100
Shea butter Availability			
January-April	5		3.3
May-August	135		90.0
September-December	10		6.7
Total	150		100
Fall in Shea butter supply			
January-April	75		50.0
May-August	30		20.0
September-December	45		30.0
Total	150		100
Market availability			
Yes	90		60.0
No	60		40.0
Total	150		100

Source: Field Survey (2012)

Table 5: Challenges and Government Support in Shea butter Processing

Challenges face	Frequency	N=150	Percentage
Technical/Inputs	30		20.0
Equipment	90		60.0
Capital	30		20.0
Total	150		100
Government Assistance			
Yes	15		10.0
No	135		90.0
Total	150		100
Solutions to Challenges			
Govt. Support and Awareness	135		90.0
Provision of equipment/Training	15		10.0
Total	150		100

Source: Field Survey (2012)

Table 6: Protection and Laws regarding destruction of Shea trees

Method of control	Frequency	N=150	Percentage
Control of cutting/farmers education	110		73.3
Enlightenment on uses of Shea trees	40		26.7
Total	150		100
Planting/Protecting of Shea trees			
Yes	115		76.7
No	35		23.3
Total	150		100
Laws on Protection of Shea trees			
Yes	115		76.7
No	35		23.3
Total	150		100
Nature of the laws/Penalty			
Warning	30		20.0
Sanctioning	120		80.0
Total	150		100

Source: Field Survey (2012)

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