

*Review Article***SHEA INDUSTRY - A MEANS OF POVERTY REDUCTION IN NORTHERN GHANA**HATSKEVICH A.¹, JENÍČEK V.¹, ANTWI DARKWAH S.²¹*Czech University of Life Sciences Prague, Institut of Tropics and Subtropics, Kamýcká 129, 165 21 Prague 6 - Suchbát, Czech Republic*²*Mendel University in Brno, International Relations Office, Zemědělská 1, 613 00 Brno, Czech Republic***Abstract**

The aim of this work is to analyze the problems of the production process and trade in the shea chain in Ghana so as to facilitate and improve the activities of those engaged in the business, policy making or research in the shea sector.

The shea tree (*Vitellaria paradoxa*) is indigenous to Sub-Saharan region of Africa and crucial to savanna ecosystems and peoples. Shea fruits are mainly collected, sold or processed into multipurpose butter. The demand for shea butter, a substitute to cocoa butter is rapidly growing in global trade of raw materials for the food and cosmetic industries. This is an opportunity to boost income to the rural women. In this article we therefore look at the role of shea nut as a source of income in the northern part of Ghana, West Africa's second largest shea exporter. We focused on the collection of shea fruits from the forest, process of preparation of shea butter and the marketing of the end product and the constraints faced in the industry are discussed. Finally, we point to the importance of shea nut in striving for financial independence of rural women in the above-mentioned area. The opportunity to use shea nuts as an alternative source of their livelihood is also discussed.

The authors also suggest that poverty reduction strategies by Non-Governmental Organizations or Governments should include shea business as one of their efficient tools. This attention to poverty reduction is reflected in this work by the search for opportunities for the rural poor and local traders in Ghana to benefit more from shea business.

Keywords: Ghana; shea tree; *Vitellaria paradoxa*; shea butter; shea nut; poverty; women; shea business.

INTRODUCTION

The shea tree, or karité in French, is in the Sapotaceae family under the accepted name *Vitellaria paradoxa* (Gaertn. f.), formerly called *Butyrospermum paradoxum* (Gaertn. f.) (Henry et al., 1983 in Boffa et al., 1996). Karité tree is widely encountered in non-coastal areas of the dry savannas, forests, and parklands of the Sudan zone of Africa (Boffa et al., 1996). The oldest specimen of the shea tree, as reported in existing literature was first collected by Mungo Park on May 26, 1797 (Fobil, 2007; Dogbevi, 2009).

According to Ferris et al. (2001) there are two main varieties of shea nut, *Vitellaria paradoxa* which is produced in West Africa and *Vitellaria nilotica* which grows in Northern Uganda and Southern Sudan.

Comparing different sources (FAO, 1988a in Fobil, 2007; DFSC, 2000 in Carette et al., 2009; Manasieva, 2011), shea trees occur naturally in a 5 000 km long and 500 km wide zone stretching from Sudan to Guinea, and can be found in twenty different countries as follows: Benin, Ghana, Chad, Burkina Faso, Cameroon, Central African Republic, Ethiopia, Guinea Bissau, Guinea-Conakry, Ivory Coast, Mali, Niger, Nigeria, Senegal, Sierra Leone, Southern Sudan, Togo, Uganda, Democratic

Republic of Congo and Kenya (see Figure 1). In Ghana, the shea tree only grows in the northern regions where the climate is dryer compared to the South. Typically the shea occurrence zone lies in the zone of 600 and 1 400 mm of annual rainfall (DFSC, 2000 in Carette et al., 2009).

Shea trees usually grow to an average height of about 15 m and girths of about 175 cm. They have profuse branches and a thick waxy and deeply fissured bark that makes it fire-resistant (Fobil, 2007).

In Ghana, shea trees (*Vitellaria paradoxa*) grow in abundance in the wild in almost half of the country occurring almost in the entire area of northern Ghana, with land coverage of over 77 670 km² in Western Dagomba, Southern Mamprusi, Western Gonja, Lawra, Tumu, Wa and Nanumba with Eastern Gonja having the densest stands. It is also reported that in Ghana, it occurs extensively in the Guinea Savannah and less abundantly in the Sudan Savannah (FAO, 1988a in Fobil, 2007). There is sparse shea tree cover found in Brong-Ahafo, Ashanti, and the Eastern and Volta regions in the south of the country (Fobil, 2007).

Apart from the fact that there is a growing demand for shea nuts, the industry is dominated by rural women who are normally the most economically disadvantaged group due to their limited access to productive assets. Due to

Figure 1: Distribution of the shea trees in Africa



Source: Authors generated.

the potential of shea nuts, Ghana wants to double its collection in the next five years to 100,000 metric tons. The Ghana Cocoa Board, the state-run board, which oversees Ghana’s cocoa-growing industry as well as coffee, has added shea-nut production to its goals. It is currently among the top ten Non-Traditional Exports of Ghana.

Local inhabitants of shea growing areas say that no one owns the shea tree, since it germinates and grows on its own. The shea tree becomes fire-resistant after it passes the germination stage of a period of three to five years. Once it survives the first five years of its early stages of germination and growth, it grows slowly and takes about fifteen years to reach maturity and can live for up to about three hundred years bearing fruit for over two hundred years (Dogbevi, 2009).

Traditional and economic significance of the shea tree

The majority of rural people in Ghana are faced with poverty, especially in the three northern regions. Despite the fact that the country has made remarkable progress in her poverty reduction drive over the past two decades, the North still records the highest levels of poverty. The Ghana living standard survey indicates that poverty is more severe in food crop growing areas as compared to the cash crop growing ones (GLSS 5, 2008).

As mentioned earlier, shea tree is important for the livelihoods of the rural population as it has been for over centuries. Almost every part of the tree has some

uses, for example: the fresh fruit is eaten and the leaves are used as fodder and also as an ingredient for making alkaline and paint (Lovett and Haq, 2000 in Carette et al., 2009).

Industrial uses

Countries such as France, Great Britain, the Netherlands, Denmark, North America and Japan are the main importers of shea (Elias and Carney, 2007 in Carette et al., 2009). Shea nut is processed into a wide range of food products including chocolate and it is now also commonly used in the cosmetic industry. In most of international products, shea is used in combination with palm oil, or illipe. In 2003, European Union accepted shea butter as one of the six vegetable fats to serve as a Cocoa Butter Equivalent (CBE) (Schreckenber, 2000 in Carette et al., 2009).

Since 1970’s as a result of unstable world market price for cocoa, the economic importance of the shea tree cannot be over emphasized since there is the need to find a suitable substitute to cocoa in the confectionery and cocoa butter industry. Shea tree also has a great untapped capacity for producing large amounts of sap that can constitute an important source of raw material for the gum and rubber industry. It is known that the mature kernel contains about 61% edible fat and can be used for medicinal as well as industrial purposes (Dogbevi, 2009).

Domestic uses

Shea tree has many economic and environmental uses to the people of the northern regions, and Ghana as a whole.

The mature trees start flowering by early November and yielding fruits over a period of five months from April to August every year. Shea fruits, when ripe, fall under their own weight and are picked up by the local inhabitants (Fobil, 2007). It is estimated that about 9.4 million shea trees grow in Ghana, and these can potentially yield one hundred tons of shea nuts worth about 100 million USD per year (Dogbevi, 2009).

Locally, shea butter is used extensively as edible oil, body and hair cream and for traditional treatment. African traditional healers have known about shea butter for thousands of years. The substance is almost magical in its healing effects on burns, skin conditions, ulcerated skin, stretch marks, and dryness. It contains beneficial vegetable fats that promote cell regeneration and circulation, making it a wonderful healer and rejuvenator for troubled or aging skin. It also contains natural sun-protectants.

Shea butter has been found to have a fat composition similar to cocoa butter, and is used as a substitute for lard or margarine as it makes a highly, pliable dough. Shea butter of poor quality is used as an illuminant (Fobil, 2007).

After shea butter is extracted, the residue serves as excellent fuel, and can also be mixed with mud for plastering traditional mud huts.

It is also known that wood from the shea tree is suitable for making sturdy tools, such as hoe handles for farming, pestles and mortars for food processing, and the carving of talking drums which play important roles in the cultural life of the people of Ghana. Thus the shea tree is the second most important oil crop in Africa after the palm nut tree.

Shea tree is a good source of food for most people of the northern parts of Ghana, especially women, who have the responsibility to supply the daily food intakes for their families. The ripening of shea fruit coincides with the lean season of food production. The pulp around its ripe fruit is sweet and edible.

Shea butter forms the greatest proportion of oil intake in most homes in the northern regions of Ghana (Dogbevi, 2009).

Medicinal uses of the shea tree

Available records show that, as far back as 1728, shea butter was considered a highly prized medicinal substance in many parts of Africa (Dogbevi, 2009).

Shea butter stands out because of its high fraction (about 8%) of content with medicinal properties. It contains essential fatty acids, and helps to protect and revitalize damaged skin and hair. It is known to be naturally rich in vitamins A, E, and F, and other vitamins and minerals. Vitamins A and E help to smooth, hydrate, and balance the skin. They also provide skin collagen acting as anti-agents for wrinkles and other signs of ageing.

Shea butter is a perfect dry skin moisturizer and is also an effective product in a form of cream for revitalizing dull or dry skin on the body or scalp. It is a good agent for skin renewal, increases circulation, and accelerates wound healing and for the treatment of many other ill conditions.

Similarly, shea butter is used as protection against sunburns hence it is found in most post sun-exposure products. In the northern parts of Ghana, it is used as pre-warm bath cream for babies to promote smooth supple skin.

Shea butter's property of remaining solid at room temperature and its stableness in formulations which helps to fast release active ingredients in medicaments

makes it suitable as a base for certain traditional ointments for the treatment of fractures and broken bones (Dogbevi, 2009).

The roots and bark also have numerous medicinal uses. They are boiled or ground into powder for the treatment of dysentery, suppurating wounds and other ailments (Millee, 1984; Soladoye, 1989; Fobil, 2007).

Financial income from shea nut

Poverty reduction through shea nut processing

There are a number of factors that make shea nuts an important vehicle for poverty reduction in Africa. Majority of the poor in Ghana are farmers who live in rural areas in the northern parts of the country. Annual rainfall of the northern parts of Ghana is about 1000 mm per year which makes the area not suitable for the cultivation of crops like palm and cocoa, however, the climate is suitable for the shea tree to grow (DFSC, 2000 in Carette et al., 2009). Initial investment for shea nut production is minimal since shea tree is an indigenous species and it occurs in large numbers in the whole of Northern Ghana. It is only labour- and time intensive as the trees are scattered. The uniqueness of shea is that it generates income specifically for women as it is traditionally seen as women's business (Elias and Carney, 2007 in Carette et al., 2009). Most women either work individually near their homes or are organized into small business cooperatives (Mensah, 2001). Moreover, shea fruit is one of the few natural resources accessible for the landless poor.

As reported by Carette et al. (2009), there is significant demand for shea products both within Ghana as well as on the international market, which is important for the income generating potential of shea.

The shea nut industry employs many individuals who are involved in all of its value chain processes. As mentioned by John Dramani Mahama, Vice President of Ghana, women numbering more than 900 000 in the three northern regions, collect over 130 000 tonnes of dry nuts every year to process and use locally. The industry also benefits close to 2 million poor people, about 95 per cent of whom are rural households, though its full potential is yet to be exploited. The shea industry, still in its infant stage, is an attractive business entity earning about 30 million USD of foreign exchange for the national economy. When the shea industry is fully developed it is estimated to yield up to three times the current foreign exchange to Ghana and also provide jobs for the teeming youths, women and the aged.

It is also reported by the Ghana News Agency that it was through the picking of shea nuts that the family of

one woman, Abdulai Zuwera of Tungteiya Shea Butter Extraction Women Association of Gushiegu, had made their living and supported her school-going children (Kwode, 2010).

Income analyses for pickers and shea butter producers

In rural areas prices offered for shea products are generally lower than that of better road-connected and urban areas. As mentioned by Carette et al. (2009), in harvest season (raining season) shea nut is generally priced between 0.11-0.14USD/kg and in off season (dry season) it increases to between 0.31-0.36USD/kg.

We illustrate the alternative scenarios of the shea business as regards to seasonal pricing and how it affects the income of shea pickers and butter producers based on seven assumptions stated below:

- Pickers who extract shea butter themselves will store all their nuts for processing. A total of 5 760 kg of nuts are picked annually per head.
- For the sake of comparison: 5 760 kg of nuts are used for both manual and semi-automated productions.
- Nut price of 0.11USD/kg is used for manual producers who are themselves pickers.
- An average nut price of 0.24USD/kg is used for semi-automated producers who are not pickers and are likely to purchase nuts throughout the year.
- A price of 0.25USD/kg is given as Government price.
- Prices for extracted shea butter are as follows:

Small quantity price - 1.87USD/kg;

Bulk quantity price - 0.72USD/kg;

Government price - 1.45USD/kg;

- It is also assumed that a household do picking 72

Table 1: Income of shea nut pickers

Season	Total Qty per season (kg)	Price/80kg (USD)	Annual income (USD)	Monthly income (USD)
Harvest	5 760	8.8	633.6	52.8
Dry	5 760	28.8	2 073.6	172.8
Assumed Gov. Price	5 760	20	1440	120

Source: Authors generated.

Table 2: Profit on shea butter production

Type of sales	Type of production	Price of nuts/kg	Processing cost/kg of butter (USD)	Qty of nuts (kg)	Qty of butter (kg)	Total production cost (USD)	Price of butter/kg (USD)	Total Sales (USD)	Average annual profit (USD)	Average monthly profit (USD)
bulk	Manual	0.11	0.47	5 760	1 900.99	209.11	0.72	1 368.71	1 159.60	96.63
	Factory	0.24	0.52	5 760	2 304.00	541.44	0.72	1 658.88	1 117.44	93.12
small	Manual	0.11	0.47	5 760	1 900.99	209.11	1.87	3 554.85	3 345.74	278.81
	Factory	0.24	0.52	5 760	2 304.00	541.44	1.87	4 308.48	3 767.04	313.92
Gov. purchase	Manual	0.11	0.47	5 760	1 900.99	209.11	1.45	2 756.44	2 547.33	212.28
	Factory	0.24	0.52	5 760	2 304.00	541.44	1.45	3 340.80	2 799.36	233.28

Source: Authors generated.

days per season and collect a total of 5 760 kg of shea nuts.

Table 1 and Table 2 show the average monthly income of picking and producing shea butter under different manufacturing processes and price regiems.

From Table 2 it is evident that selling shea butter in bulk quantities to the middlemen is not in the interest of both manual and factory producers since the bulk price is almost a third of the small quantity price. Pickers as well lose when they sell their nuts during the harvest season. In the dry season, the price increases about three times as against that of the harvest season.

From Table 2 it is clear that when the Government come in to purchase both shea nuts and butter, most pickers and butter producers will earn more income which will lead to poverty reduction in the shea producing areas. This is so because most of them sell their products in the harvest season and not in the dry season for the simple reason that they need money to survive.

Although the Government of Ghana is determined to increase the collection of shea nuts, more strict attempts should be made in the areas of research and marketing of shea nuts. The formation of cooperatives should also be encouraged and all the other stakeholders should help solve initial problems confronting shea nut collectors, processors and those engaged in marketing. These aims can be achieved through the following:

1. Invest in shea kernels in the harvest season and sell them in the dry season, as prices might rise up to threefold in the dry season as compared to the harvest season (harvest season 2007: 0.11USD/kg, dry season 2007: 0.36USD/kg).

2. Ghana Regional Appropriate Technology Industrial Service (GRATIS), a local technology transfer initiative should be tasked to design local tools for the shea butter industry. This would ensure the availability of spare parts and also reduce initial and maintenance cost.

3. The Ghana Cocoa Board (GCB) should set up shea

nut buying centers in the north as it did for cocoa in the south to ensure good price during the harvest period.

4. Organized middlemen in the form of buying agencies should be engaged to assist Government in reaching the remote areas to purchase shea as in the case of cocoa in the south.

5. Rural roads leading to the buying centers and also from those centers to the urban centers should be made motorable.

6. From the income analysis, shea processing factories should be assisted to export their product themselves and not through middlemen or the Government should purchase their product for export. This will enable the small-scale rural producers to concentrate on the local market and also sell their product to agencies approved by the Government.

7. To ensure effective poverty reduction through shea industry, Government should regulate the purchase of both shea nut and butter as in the case of cocoa.

8. To ensure quality of both nuts and butter, pickers and local processors should be organized into co-operatives and given extension services.

9. Pest control of shea nuts should also be considered in a similar way to that of cocoa spraying exercises in the south.

CONCLUSIONS

In the Ghana Government's attempt to bridge the development gap between the northern and southern parts of Ghana, the shea nut industry should be given serious consideration since it is seen to hold the key to the successes and improvement of many lives just as cocoa has done in Southern Ghana.

Based on the prices of shea in 2008, an average monthly income of 53-173 USD is attainable per picker and 97-279 USD per extractor. These amounts are quite substantial for households in the rural northern areas as compared to the estimated average monthly income of 50-100 USD per farmer in the same area. With the needed assistance their income can increase two-to-three times.

It is hoped that the development of shea nut into a dependable cash crop will substantially reduce poverty in the northern part of Ghana in particular and the country as a whole as the majority of the poor are in the rural area in the northern sector of Ghana.

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