



Environment and Forestry

Elixir Environ. & Forestry 96 (2016) 41616-41620

Elixir
ISSN: 2229-712X

Women Dependence on Harvesting, Processing and Marketing of *Vitellaria Paradoxa* (Shea Butter) Seeds in Savanna Area of Oyo State, Nigeria.

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ARTICLE INFO

Article history:

Received: 4 May 2016;

Received in revised form:

11 July 2016;

Accepted: 16 July 2016;

Keywords

Women,
Vitellaria paradoxa,
Harvesting,
Processing,
Marketing.

ABSTRACT

This study examined the dependence of women on the harvesting, processing and marketing of Shea seeds a non-wood forest product (NWFPs) with a view of establishing its contribution to their economic empowerment in Saki, Oyo state. Data were obtained from a random sample of three categories of target groups; harvesters, processors and marketers of Shea butter in the study area by means of questionnaire. The data collected were analyzed using descriptive statistics such as frequency table and percentages for clarity purpose. Results from the analysis revealed that women were actively involved in the Shea business across all levels with 73.3% gatherers, 100% processors and 70.70% marketers/middlemen, this is probably because women are involved in the provision of food security and family welfare in most communities worldwide. Twenty-nine (96.67%) of the processors and all the gatherers had *Vitellaria paradoxa* stands on their farmland which served as a major source of *V. paradoxa* fruits from which the Shea is processed while others without tree stands collected the fruits from nearby forest lands. The result also showed the rate of collection of shea nut by harvesters. 10%, 10%, 20%, 23.33%, 6.67% and 16.67% gathered between 1, 4, 5, 6, 8 and 10 tons of shea nuts respectively while 13.33% gathered less than 1 ton per annum. The average per capital income generated by the different categories of respondents in the business showed that harvesters (6.67%) earned between 10,000 and 50,000, 23.33% earned above >50,000, 26.67% earned above >90,000 and 43.33% earned above >130,000 as annual income for their families.

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Introduction

Forestry plays a vital role in the sustainable livelihood of people. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain capabilities and assets both now and in the future, while not undermining the natural resource base (DFID, 1998). Forests provide a wide range of benefits at the local, national and global levels. People are dependent upon natural resources for meeting a large number of their basic needs of life. The type of resources and utilization patterns, however vary by ecological zone and socio-cultural area. The contribution of NWFPs therefore, to forestry sector in particular and rural dwellers generally in most countries is significant, though it had been undervalued in the past (Arabomen, et al. 2009). Non-wood forest products are a huge variety of materials derived from forests excluding timber and fuel wood. NTFPs include bark, roots, tubers, corms, leaves, flowers, seeds, fruits, sap, resins, honey, fungi, and animal products such as meat, skins, bones, and teeth. NTFPs are harvested from forest areas and are produced in farmers' fields. They are used for food and medicine and as a source of income. NTFPs are consumed in rural and urban homes, and are traded in local, regional, and international markets. NTFPs provide small but significant sources of income, particularly for women and for families that do not have access to agricultural markets. NTFPs also provide critical supplies of food during periods when agricultural

crops fail or are otherwise scarce. Transportation costs largely determine whether what is the most important source of rural household income: low value-to-weight ratio agricultural crops that can be produced consistently in large quantities or high value-to-weight ratio NTFPs that are available inconsistently in relatively small quantities. In the South-West and North-West provinces of Cameroon the value of NTFP production and marketing exceeded U.S. \$19 million in 1999, and contributed 2.8% to the regional economy. In contrast, timber, in this predominantly logged-over area, contributed 5% and agricultural crops 27%. In unlogged areas of old-growth forest, the value of timber is considerably higher (Laurie Clark et al, 1999).

Deforestation has become a major concern in Nigeria as populations increase and pressure on the forest and savanna increases. The rate of fuel wood consumption for example across the entire Sudano-Sahelian region is on the rise and is a major factor in the degradation of the land (Odihi, 2003). Throughout Nigeria, it is estimated that 70% of the population use fuel wood for their cooking needs while another 20 % use at least some wood for food production. Therefore the use of fuel wood coupled with growing populations has contributed to the rising deforestation in the country. Increasing deforestation coupled a move towards more intensive agriculture threatens the traditional agricultural system across the region (Boffa, 1999).

Traditional agricultural systems involve a fallow period coupled with the leaving of trees in fields for a “parkland system” (Boffa, 1999). More and more these parkland systems are being thinned out and the fallow periods are being shortened, thus reducing the amount of trees to remain on the landscape as the need for agricultural land increases, some argue that multi-purpose uses of tree species and the economic viability of tree products should be explored (Boffa, 1999). One of the trees often identified as valuable economically throughout much of the region is *Vitellaria paradoxa*. In the past two decades the link between conservation and income generation has been emphasized in much of the environment and natural resource literature regarding Africa (Dankleman and Davidson, 1998; Western et al, 1994; Leaky, 1999). Groups such as World Wide Fund for nature (WWF) and the International Union for Conservation of Nature (IUCN) have called for conservation programs designed to benefit local communities in order to provide incentives to preserve biodiversity (Brechen et al, 2003). One method has been encouraged through marketing of NTFPs. This market based conservation approach strives to provide an economic incentive in order to conserve the resource on which it is based (Kainer et al, 2003). *V. paradoxa* is distributed within the Sudano-Sahelian landscape from Senegal in the West to Ethiopia in the East. In this 5000km wide belt the tree grows in the Sudanian, Sudano-Sahelian and Guinean Savanna zones between the Rainforests and the dry land Sahel region (Karin, 2004). *V. paradoxa* belongs to the Sapotaceae family divided into two species Nilotica and Paradoxa. It is a deciduous tree of medium size with a spherical crown. It often reaches heights of about 10-15meters, with rare recorded occasions of up to 25m (Maydell, 1990) and girths of about 175m with profuse branches and a thick waxy and deeply fissured bark that makes it resistant to fire. Been a slow growing and light demanding tree, the flowers appear from December to March, greenish yellow in color and occur in terminal groups of approx 30 to 40. They are insect pollinated often associated with bees (Maydell, 1990; Joker, 2000; Maranz and Wiseman, 2003). *V. paradoxa* thrives on dry sandy soils that have good humus cover, but occur on a variety of soil types (Hall, et al, 1996). It has an extensive root system which helps it to tolerate the extended dry season (up to eight months) and occasional droughts of the savanna. It fruits from 15years of age and continues with longevity of 200 to 300 years (Hall et al, 1996; Joker, 2000). The fruit is yellow-green, elliptical, and about 5-8cm long and 3-4cm wide. Each fruit contains one large oval to slightly round, red brown to dark brown seed usually referred to as the ‘Shea nut’ (Maydell, 1990; Maranz and Wiseman, 2003). The shell of this nut is shiny, smooth and fragile. The nuts are recalcitrant in nature having high moisture content, this makes storage of unprocessed seeds difficult and viability is often lost within two to three weeks after fruit maturity (Danthu et al, 2000; Maranz and Wiseman, 2003). The tree has no capacity for vegetative propagation and can only be done through its seed and according to legend no one owns the Shea tree because it germinates and grows on its own. In Mali, Karter et al (1992) found that regeneration has become a problem particularly in areas that have a larger livestock population. Livestock and fires are the main barriers to regeneration of the tree. It thrives best on agricultural land where it is protected from fires and livestock. *Vitellaria paradoxa* is a forest tree not only valued for its medicinal purpose but also for its highly nutritional potential. *V. paradoxa* stands serve as park species as the

leaves could be fed to animals. Stands of *V. paradoxa* also serve as erosion control on forest and degraded lands, nutrient enrichment capacity as it significantly influence the fertility of tropical soils by maintaining soil organic matter, used as wind break being a tool for fighting against desertification etc.

On the international market there are over 150 NTFPs of major importance, one of which is Shea butter (Carr et al, 2000). Shea butter is processed from nut of *Vitellaria paradoxa* tree, and is sold on the local markets throughout the savanna regions of Africa and on the International market for use in cosmetics and chocolate making. Shea butter is a natural botanical product derived from the seed of the wild savanna fruit tree *Vitellaria paradoxa* found from Senegal to Ethiopia and Uganda. As a medicinal, cosmetic and cultural product, Shea butter is unique in the world. It is a precious natural resource of the ancient savanna woodland and has long been in the domain of women. Since the days of Pharaoh, Shea butter has been prized for its healing properties in skin care based on the activity of its unique and active natural compounds including Karitene and Butyrospermol, along with high levels of Allantoin which is known to promote healing and regeneration of healthy skin. Shea butter has been appreciated internationally in recent years as an active therapeutic ingredient in the most elegant and effective hair and skin care products; even a tiny fraction of Shea butter in the ingredient lists adds great value to any cosmetic formulation. It is used as an anti-inflammatory substance and an emollient to soothe dry, chapped or damaged skin and to activate healing of wounds. It moisturizes hair as well as skin with deep penetrative properties. Prices paid to producers are three to five times higher than local prices for traditional Shea butter. Been a source of income to women it helps to maintain a healthy household, providing income for food, clothing, education and medicare and a wide variety of productive investments which help develop the local economy. With increased household income from its sustainable use, the value of the living tree has been increased and greater economic power given to women from this ancient resource. There are many reported uses of *Vitellaria paradoxa* in its range. The oil from the kernel of the Shea seed is the principal source of fat in many local diets (Saul et al, 2003), although in some areas it is not used for that purpose (Booth and Wickens, 1998). The wood can serve as a source of quality fuel wood and sturdy tools (Booth and Wickens, 1998s; Boffa et al, 2000; Kristensen and Lykke, 2003).

In Nigeria, the activities and roles of women in forestry development are numerous ranging from collection of seeds and fruits through nurturing and conservation to processing and marketing of forest products. Women are more knowledgeable on types of tree species that are useful to their families and so they leave these undisturbed during land clearing (Aiyelaja and Popoola, 2005). Women’s role in all aspects of live: social, political and economic has been a subject of increasing interest to development planners in countries throughout the world. They are the “*de facto resources managers*” in the environment in which they are trying to survive. Also they are very knowledgeable about the use of plants in traditional medicine and are deeply concerned about the alarming rate of harvesting forest resources (Ajayi et al, 1997). The vital role women play in utilizing and conserving the forest and its resources makes it not logical but critical, they therefore should be included in forest development programs.

Women and their children are collectors of fruits, foods, seeds, leaves, herbs, fuel wood and other products for members of their family. Women utilize many NTFPs which provide livelihood especially during the dry season when they rely on forests foods such as snails, mushroom, wildlife and other products (Ozon-Eson, 2002). Exposure of rural women to forestry related programs would assist in poverty reduction in families in particular and society at large, for example, planting and tending of fruit trees by women in their home stead will make them more readily available in the society (Agbogidi et al, 2005) since they play vital role in nation building (IFPRI, 2004). This study aims to assess the dependence of women in harvesting, processing and marketing of *Vitellaria paradoxa* in Savanna Area of Oyo State, Nigeria with a view to determine its contribution to household economy.

Methodology

Study Area

The study was conducted in Saki town along the Guinea Savanna zone of Nigeria cutting across latitudes 8-9° North. It is bordered in the West by the Republic of Benin, to the North by Kwara State, to the east by Orelope Local Govt and to the South by Atisbo Local Govt in Oyo State. The town houses two Local Government Areas; Saki East and Saki West with a projected population figure for 1996 at 388,225 (NPC, 1991).

The people are Agrarian in nature involved in local and international trade of many Non Timber Forest Products including Shea-nuts. Being a border town, there are lots of commercial activities and foreign goods that are traded.

Data Collection

Data were obtained with the use of structured questionnaires and personal interview across Saki East and West Local Government Areas of the town. The questionnaires were designed to elicit information on the demographic and socio-economic characteristics of respondents, economic activities in relation to harvesting, processing and marketing of the product, methods of harvesting, waste management patterns etc. Purposive and simple random sampling techniques were used to select three main categories of respondents; harvesters/gatherers, processors and marketers/retailers. A total number of one hundred and twenty (120) questionnaires were administered distributed to the gatherers/harvesters (30), processors (60) middlemen/marketers retailers/end-users (30).

Data collected were analyzed using descriptive statistics such as percentages and frequency for clarity purpose.

Results and Discussion

All the questionnaires for all categories were answered except the middlemen/marketers where 58 (96.67%) were answered leaving 2 (3.33%) unanswered.

Table 1. Demographic and Socio-Economic Characteristics Of Respondents.

VARIABLES	GATHERERS		PROCESSORS		MIDDLEMEN/MARKETERS	
	FREQ	FREQ	%	FREQ	%	
GENDER						
MALE	8	26.70	0	0	17	23.30
FEMALE	22	73.30	30	100	41	76.70
AGE (YEARS)						
31-40	5	16.67	4	13.33	3	5.17
41-50	11	36.67	15	50.00	27	46.55
51-60	10	33.33	11	36.67	25	43.10
>60	4	13.33	0	0	3	5.17
MARITAL STATUS						
SINGLE	0	0	0	0	0	0
MARRIED	28	93.33	30	100	56	96.55
WIDOWED	2	6.67	0	0	2	3.45
FAMILY SIZE						
1-6	4	13.33	7	23.33	10	17.24
7-12	26	86.67	23	76.67	48	82.76
≥ 13	0	0	0	0	0	0
EDUCATIONAL BACKGROUND						
PRIMARY	2	6.67	10	33.33	24	41.38
SECONDARY	1	3.33	1	3.33	0	0
ADULT EDUCATION	1	3.33	0	0	5	8.62
NONE	26	86.67	19	63.34	29	50.0
PRIMARY OCCUPATION						
FARMING	30	100	30	100	0	0
TRADING	0	0	0	0	50	100
CIVIL SERVANT	0	0	0	0	0	0
ARTISAN	0	0	0	0	0	0
CRAFTSMAN	0	0	0	0	0	0
OTHERS	0	0	0	0	0	0
SECONDARY OCCUPATION						
FARMING	0	0	0	0	0	0
TRADING	2	6.67	0	0	0	0
NONE	28	93.33	30	100	58	100
FARM SIZE						
2	4	13.33	4	13.33	0	0
3	13	43.33	10	33.33	0	0
4	9	30.0	13	43.33	0	0
5	4	13.33	2	6.67	0	0
NONE	0	0	1	3.33	58	100

It was observed that the marketers also acted as middle men and were more available and involved in the Shea business than other groups hence the number of questionnaires administered to them doubled that of the others.

Table 1 shows the demographic and socio-economic characteristics of the respondents who engaged in Shea butter business across levels of production respectively.

It was revealed that women were more actively involved in the Shea business across all levels of with 73.3% gatherers, 100% processors and 70.70% marketers/middlemen, this is probably because women are involved in the provision of food security and family welfare in most communities worldwide (Arabomen et al, 2009). Twenty-nine (96.67%) of the processors had *Vitellaria paradoxa* stands on their farmlands and 100% of the gatherers too. This served as a major source of *V. paradoxa* fruits from which the Shea is processed and a source of shade to both the farmers and their crops. Others without tree stands collected the fruits from nearby forest lands.

Table 2 shows the rate of collection of shea nut by harvesters. It was observed that most of the gatherers (86.67%) sold to produce-buyers and these were those that gathered the seeds largely between 1-10 tons/annum on the average. 10%, 10%, 20%, 23.33%, 6.67% and 16.67% gathered between 1, 4, 5, 6, 8 and 10 tons of shea nuts respectively while 13.33% gathered less than 1 ton and sold directly to processors.

Table 2. Average Rate/Tonne/Annum of Shea Nut Obtained by Harvesters.

NUMBER OF COLLECTO	%	RATE (TONNES/ANNUM)
4	13.33	<1
3	10	1
0	0	2
0	0	3
3	10	4
6	20	5
7	23.33	6
0	0	7
2	6.67	8
0	0	9
5	16.67	10

Table 3 shows the average per capital income generated by the different categories of respondents in Shea butter business. It was revealed that the middlemen/marketers had the highest income followed by the harvesters while the processors had the least income generated from this business; this is because of the low level of average yearly production of shea butter.

Some processors (93.33%) processed only the shea nuts they get on their farms while others (6.67%) bought more to compliment their harvest.

In all, the processors were able to gather between 100-400g of the shea nuts per annum on the average. This implies

that the processors processed on a relatively small scale majorly while the bulk of the nuts were sold to produce buyers through middlemen/marketers. Harvesters (6.67%) earned between 10,000 and 50,000 from shea nut gathering and sale, 23.33% earned between >50,000 and 90,000, 26.67% earned between >90,000 and 130,000 and 43.33% earned between >130,000 and 170,000 as annual income for their families.

Stages in the processing of shea nut as indicated by respondents.

The traditional method of shea butter processing is arduous and labor intensive requiring large amounts of water and fuel wood. The total time required to process the shea butter excluding harvesting and drying is about 5-6hrs or more.

The following stages involved in the processing of shea nut/seed is highlighted below.

- Bury fruits in pits to allow fermentation (i.e. disintegration of the fleshy part)
- Boil the remaining nut to remove any fruit pulp remaining
- Either sun dry the nut for 5-10 days or roast over a fire or traditional oven for 2-3days
- Remove nuts and dehull either with a mortar and pestle or crack between two stones/rocks
- Dry the nuts to reduce the moisture content to minimum
- Pound the kernels into a thick paste
- Mix paste with hot water and knead to a dough-like consistency
- Wash dough in cold water to separate the liquid and solid fats
- Wash the solid fat (shea butter) again in cold water and heat
- Dish into containers (of various shapes and sizes) and allow it to cool, then it is ready for sale.

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Table 3: Income Generated from Shea Butter Activities by Respondents.

Annual income ('000n)	Gatherers		processors		middlemen/marketers	
	freq	%	freq	%	freq	%
10-50	2	6.67	0	0	3	5.17
>50-90	7	23.33	14	46.67	5	8.62
>90-130	8	26.67	16	53.33	25	43.10
>130-170	13	43.33	0	0	21	36.21
>170-210	0	0	0	0	4	6.90

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