

Socio-economic importance and Utilization of *Garcinia kola* (Heckel) in Ore, Ondo State Nigeria

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Abstract— The research was carried out in Ore, Odigbo Local Government, Ondo State, Nigeria, to examine the uses of *Garcinia kola* and its socio-economic importance. Stratified Random Sampling Technique was used for the study. Ore was divided into three Strata based on the distribution of major markets in the area. Each Stratum had a major market. From each market, 110 respondents were randomly selected. Questionnaire and interview were the instruments of data collection. Descriptive statistics and cost and return analysis were used to analyse *G. kola*'s socio-economic importance in the study area. The result showed that *Garcinia kola* has important uses to the society in curing various ailments such as cough, chest pain, tooth ache, rheumatism, hernia, dysentery, makes labor and easy delivery of baby, malaria and for social engagement like naming and wedding ceremonies. Furthermore, the results showed that trade of *G. kola*, a non-timber forest product (NTFP), contributes to the family income in a great extent and to the nation's economy at large as the result revealed quarterly net income of ₦118,800.00. It is therefore recommended that forest policy should encourage more plantations of *G. kola* and product diversification from the use of the kola.

Keywords— Budgetary analysis, Descriptive analysis, *Garcinia kola*, Socio-economic, Utilization

1.0 INTRODUCTION

The role of indigenous fruit trees in the society is now widely recognized. The wild (non-domesticated) and cultivated (domesticated fruit trees) contribute to human health by improving food security and nutrition (Powel *et al.*, 2011). Rural dwellers extract a variety of Non-Timber Forest Products including all biological materials other than timber, which are extracted from natural forest for human use. These products include fodder, spices, medicines, honey, leaves, roots and twigs. Non-Timber Forest Products (NTFPs) are important for food security, health and socio-economic wellbeing of the community (Food and Agricultural Organisation, 1989). Non-timber forest products provide a significant contribution, especially during drought and famine in creating many varieties of palatable and balance diet (Gakon *et al.*, 1994).

Garcinia kola (Bitter Kola), a name sometimes also used for *G. afzelii* is a species of flowering plant in the Guttiferae family. It is found in Benin, Cameroon, Democratic Republic of the Congo, Ivory Coast, Gabon, Ghana, Liberia, Nigeria, Senegal and Sierra Leone. Its natural habitat is subtropical or tropical moist lowland forests. Medicinal uses include purgative, anti-parasitic and antimicrobial. The seeds are used in the treatment of bronchitis and throat infections. They are also used to prevent and relieve colic, cure head or chest colds and relieve cough. Also, the plant is used for the treatment of liver disorders and as a chewing stick.

In view of geographical distribution of *G. kola* and

its wide contribution to health care, there is need to evaluate the economic importance of the species – *Garcinia kola* in Ore, Odigbo Local Government area of Ondo State in order to ascertain its range of value since few attempt have been made to improve the tree species. Alternatively, it may be necessary to reduce the 10–15 years it takes to reach seed to fruit production, in view of its socio-economic and cultural importance as reported by Adebisi (1997). There is also the need to establish more facts on the important uses of the tree plant parts in the Ore axis of Ondo State, Nigeria.



Figure 1: Picture of *Garcinia kola* adapted from Dah-Nouvlessounon *et al.* (2015c)

2.0 MATERIALS AND METHOD

The study was conducted in Ore, the headquarters of Odigbo Local Government Area in Ondo State, Nigeria. The local government has a land area of 1,818 km² and a

population of 230,351 with 114,814 male and 115,537 female (NPC, 2006). Ore shares boundaries with Edo state and Ogun state which actually result to the high level of commercial activities in the city. And within the state, the city shares boundaries with Okitipupa Local government, Irele Local government and Ondo West Local government. Primary data were collected from respondents utilizing and marketing *G. kola* in Ore. Three major markets were selected. The markets were Olokuta, Reserve and Sabo. Questionnaire with interview were the instrument for data collection. Collected data include socio-economic characteristics of respondents, uses of *G. kola*, and income of respondents for their involvement in the marketing of *G. kola*. Stratified Random Sampling Technique was used for the study. Ore was divided into three Strata based on the distribution of major markets in the area. Each Stratum has a major market. Three markets were selected – Olokuta, Reserve and Sabo markets. From each Stratum, respondents were randomly selected. A total of one hundred and ten respondents were selected with distribution among the markets as stated below;

Olokuta-40, Reserve-35, Sabo-35. The collected data were analyzed using descriptive statistics such as frequency, percentages and budgetary techniques.

3.0 RESULTS

TABLE 1: Demographic Distribution of Respondents

Variables	Label	Frequency (n=110)	%
Age	≤30 years	6	5.5
	31-40years	27	22.5
	41-50years	37	33.6
	51-60years	32	29.1
	61 &above	4	3.6
Sex	Male	12	10.9
	Female	98	89.1
Marital Status	Single	9	8.2
	Married	75	68.2
	Divorced	6	5.5
	Widowed	20	18.2
Mode of Entry	Inherited	57	51.8
	Apprenticeship	53	48.2
Other Occupations	Farming	14	12.7
	Native Doctor	35	31.8
	No response	61	55.5

Source: Field Survey (2016)

Table 2: Uses of *Garcinia Kola* Parts

Plant parts	Uses	Frequency (n=110)	Percentage
Bark	For easy delivery	28	25.5
	For malaria	45	40.9

Leaves	For rheumatism	37	33.6
	Total	110	100
	For bathing baby	21	19.1
Root	For Malaria	23	20.9
	No response	66	60.0
	Total	110	100
	For Cough	12	10.9
Seed	For hernia	34	30.9
	For malaria	6	5.5
	For rheumatism	18	16.4
	For Toothache	4	3.6
	No response	36	32.7
	Total	110	100.0
	For cough	38	34.5
preparation in winning court cases	For hernia	12	10.9
	For charm	6	5.5
	For rheumatism	10	9.1
	For hypertension	8	7.1
	For Toothache	36	32.7
Total	110	100.0	

Source: Field Survey (2016)

Table 3: Mode of Use of *Garcinia Kola*

Ailments	Mode of Use
Malaria	Grind bitter kola leaves with <i>Piper guineense</i> (Ighere), then cook with black fish and drink half tea cup morning and evening.
Cough	Grind <i>Garcinia kola</i> seeds and mix with honey in a convenient bottle for licking.
Chest pain	Grind the seeds with kola nut, together with <i>Aframomum melegueta</i> (Atarere) with palm oil and lick.
Dysentery and hernia	Peel the bark of <i>Jatropha curcas</i> (Seluju or Ewe lapalapa funfun) and cut some bitter kola seeds, put them inside container for drinking
Easy delivery	Use bitter kola leaves together with <i>Sida acuta</i> (Ewe iseketu) leaves and drink.
Bathing new born baby	Leaves use in bathing new born baby.

Wedding ceremony	<i>G. kola</i> seeds are traditionally used for wedding ceremony, significantly for long relationship in marriage. The seeds are provided by the bridegroom.
Naming ceremony	<i>Garcinia kola</i> seeds are traditionally used for naming ceremony, significantly for long life of new born babies.

Source: Field Survey (2016)

Table 4: Quarterly Budgetary Analysis of the Markets

Market	income (₦)	Cost of rent (₦)	Product cost(₦)	Transp ort cost (₦)	Total (₦)
Olokuta	468,500	328,000	20,000	73,450	421,450
Reserve	419,000	287,000	17,500	64,550	369,050
Sabo	452,500	349,000	17,500	64,200	430,700
Total	1,340,000	694,000	55,000	202,200	1,221,200

Source: Field Survey (2016)

Minimum income	= ₦419,000.00
Maximum income	= ₦468,500.00
Total Variable Cost	= ₦964,000.00 + ₦202,200.00 = ₦1,166,200.00
Total Cost (TC) = TVC + TFC	= ₦1,166,200.00 + ₦55,000 = ₦1,221,200.00
Total income of the respondents' (TR)	= ₦1,340,000
Total net income of the three markets	= TR – TC
Total net income	= ₦1,340,000 – ₦1,221,200
Total net income	= ₦118,800.00

DISCUSSION

From the result, the bio-data of the respondents revealed that marketing of *Garcinia kola*, NTFP, is gender based as 89.1% were female. The marital status distribution shows that 68.2% respondents were married, 18.2% are widowed, 5.5% are divorced and 8.2% are single. This implies that the marketing of NTFP's can be integrated into family line. Majority of the respondents were between 41 – 50 years of age, which could be attributed to the fact that it is an age-long profession. The mode of entry shows that majority (51.8%) got into the trade via inheritance, which showed that the business had been integrated into family line. The result further showed that less than average numbers of the traders were into other businesses, however, where native doctors accounted for 31.8%, and it could be deduced that some of the traders also employ local and indigenous knowledge in the uses of tree species part (Table 1).

Table 2 showed all the categories of respondents revealing the various uses of the plant's parts which showed the diversity of its uses. The bark is used as an anti-malaria which accounted for the highest percentage (40.9%), for rheumatism 33.6% and easy delivery of babies 25.5%. The leaves are used for bathing the new born babies and for malaria fever. It could be deduced from the table that majority of the respondents do not know the uses of the leaf part which accounted for 60% of no response. The root cures so many diseases like cough when mixed with honey as seen in table 5 and reported by Ayensu (1978) and Adaramonye *et al.*, (2005). It also showed the various ways bitter kola seed is being used: cough, which accounted for the larger percentage (34.5%), followed by tooth ache 32.7%, for hernia, rheumatism, hypertension and for charm preparation functioning in legal issues. It can be deduced that a larger percentage of the respondents use the seed part for cough, followed by tooth ache as reported by Adaramonye *et al.* (2005), Nzelibe *et al.*, (2007) and Iwu (1993), and in the treatment of dysentery as reported by Aluka (1985). The mode of various uses is stated in Table 3.

Table 4 shows the cost analysis of *G. kola* business; In Olokuta market, the average income is ₦11,712.50, in reserve market, the average income is ₦11,971.43 while in Sabo market, the average income is ₦12,928.57, The cost analysis of the three markets indicates that Reserve market had the highest value of net income of ₦49,950.00, while Sabo market has the least net income which is ₦21,800.00. The average income of the three markets is ₦12,204.17. The total income of the whole respondents is ₦1,340,000.00 in three months, the total cost of the *Garcinia* parts product is ₦1,221,200.00 and the net income of the three markets is ₦118,800.00 for three months. This shows that there is a growing market of herbal medicine where *G. kola* parts are part of ingredient being used as reported by Messerole (1995). It also shows that trade of *G. kola* parts contributes immensely to the family's revenue in meeting the social and educational obligation of the people and in combating poverty as reported by Kabuye (1998). This also contributes to *G. kola* conservation value as reported by Aiyelaagbe *et al.* (1996).

The result indicated that the economic contribution of the sales of this tree parts goes a long way to increase the family's income and in fighting against poverty and some ailments in the study area. This established the fact that NTFPs contribute to the treasury of family, private enterprises and government, either through plantation establishment or forest reserve management, or through collection of these NTFPs. Also, effort on the knowledge of *G. kola* utilization has been established not only through the varieties of ailment the tree parts cures as supported by Hutchinson and Dalziel (1956) but also the cultural and social value of the species in all parts of Nigeria and in West

Africa. They have also many uses of a ceremonial nature and in traditional medicine (Koffi *et al.*, 2015). Indeed, *G. kola* seeds extract can prevent or cure bacterial infection (Stanley *et al.*, 2014; Denloye *et al.*, 2009). The seed/kernels also contain a chemical called 'kolaviron', a biflavonoid which has antimalarial properties (Murray *et al.*, 2012; Oluwatosin *et al.*, 2014). Farombi and Owoeye (2011) reported antiviral, antihepatotoxic and antidiabetic properties of *G. kola*, while anti-sickle cell disease (Antisickling) activities of leaf extracts were revealed by Adejumo *et al.* (2011).

Conclusion

There is need and urge for establishment of more *G. kola* plantations or the improvement on the cultivation of the tree species in order to keep the pace of increase on its economic contribution to the society. Diversification of the products should be encouraged to create more market opportunities and accrued benefits. There is also need for the government to increase revenue generation through taxation among *G. kola* traders. With the increasing human demand on health issues, there is need for more proper documentation on the use of forest plant's parts and more research should be carried out to expose the potentials of NTFP's in the Nigerian forest in curing various diseases affecting man.

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