

Socio-economic Benefits of *Parkia biglobosa* in Michika Local Government Area, Adamawa State, Nigeria

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Abstract : This study analyzed the socio-economic benefits of *Parkia biglobosa* in the study area. A purposive random sampling technique was used to select 180 respondents; 60 each of producers, traders and consumers who were administered with questionnaires to elicit data. Information from personal observations and interpersonal communications was used to augment data from the questionnaire. Socio-economic benefits were analyzed using simple descriptive statistics and budgetary tools. Benefits derived from *Parkia biglobosa* were provision of food and nutrition, income and employment, household energy, medical services, improved soil fertility, environmental protection and raw materials from local crafts and other enterprises. Seeds, fuel wood and charcoal were the principal sources of cash incomes. The aggregate monthly net income for producers was from ₦128,000.00 and similarly, that of traders was ₦38,000.00. Based on these results, both producers and traders in the study area were adjudged living above the current national monthly minimum wage of ₦18,000.00 only. The study recommended intensive establishment of the species in plantations, and improved processing and pricing policies for the products to sustain the benefits.

Key words: Non-timber forest products, livelihood, *Parkia biglobosa*, net income.

I. INTRODUCTION

Nigeria is a country that has experienced a high incidence of poverty and inequality in the last two decades. The majority of the poor, over 70 %, are located in the rural areas where most of the people and national resources are located. The incidence of poverty is much higher in the rural areas where poverty is a major factor hampering development. There is inadequacy of food supply, good health as well as income and education, particularly, among the informal sector. To mitigate the effects of food shortages and other poverty challenges rural people can utilize a wide range of products from their natural environment. Non-timber forest products (NTFPs) are therefore, very essential in this regard (Popoola 2005; Marshall *et al.* 2016). These products could be harnessed to meet daily subsistence needs, as sources of raw materials for buildings and shelter, development of cottage industries, as well as medicinal aids in the rural economies. Furthermore, the significance of NTFPs for medicinal purposes is reflected in the present global interest in herbal medicine (FOS, 2015).

The NTFPs also make significant contributions to food security providing essential dietary supplements, especially, during lean agricultural production periods and times of emergency. Products like leaves, fruits, nuts and oils and wildlife in different areas of Nigeria (NES, 2014). Trade in NTFPs also provides an important source of cash income for the rural poor. Thus, Zira *et al.* (2013) asserted that the inhabitants within the guinea savanna area of Nigeria rely, essentially, on agroforestry for sustenance, health and their general wellbeing. Consequently, farmers in the area deliberately maintain mixtures of arable crops with such trees as *Vitellaria paradoxa*, *Parkia biglobosa*, *vitellaria paradoxa*, *Adansonia digitata*, *Azelia Africana* and *vitex doniana* in order to harness these benefits. However, to develop and derive more rewarding benefits from these plant species, the socio-economic analysis of these products becomes pertinent.

In fact, socio-economic studies are very vital to policy makers because outcome from such studies help them appreciate how different socio-economic unit of a population will affect existing policies (Ajewole and Aiyeloja, 2004). This knowledge will therefore, help policy makers to develop more user-friendly policies and strategies, since they may have anticipated the level of reaction in favour or otherwise of the existing policies. Similarly, Oyerinde (2008) opined that market-based analysis are essential in providing incentives for the sustainable management of resources involved. This study explores the socio-economic benefits of *Parkia biglobosa* in Michika local Government Area (LGA), Adamawa State, to ascertain its contributions to the wellbeing of the people. Specifically, the study, using market-based approach determines the income generating potentials and other benefits of *Parkia biglobosa* products in Michika Local Government Area.

II. METHODOLOGY

Study Area

This study was conducted in Michika Local Government Area (LGA) of Adamawa State, situated between Latitude 9° 30' to 11° 45'N and Longitude 13° 45'E. It has a land mass of 1,241km² with population of 155,238 (Adebayo, 2004; NPC, 2006). Michika experiences a typical climate with two distinct seasons; the rainy season (April to November) and the dry season (December to March). The state lies in a transitional

area within the southern Guinea Savanna Zone of Nigeria, with rich alluvial soils (Adebayo, 2004). Native tree species like *Vitellaria paradoxa*, *Prosopis africana*, *Vitellaria paradoxa*, *Adansonia digitata*, *Azelia africana*, *Vitex doniana* and *Daniella oliveri*, are prevalent.

Sampling Techniques

The study was conducted during the 2017/2018 harvest seasons, it purposively, selected Michika main Market, Garta Market and Bazza market for investigation. These markets were selected because they are organized with active trade in *Parkia biglobosa* products. A purposive random sampling technique was used to select 180 respondents; 60 each of producers, traders and consumers. At least 20 respondents from each category of the study population were purposely sampled from each of the markets selected for the study to satisfy the normal distribution theory. Primary data were collected, using validated sets of questionnaire administered between May and September, 2015. The questionnaire was validated through pretesting during reconnaissance survey. Information elicited from the respondents was market retail prices of products per units, production costs, and the various benefits and uses of products.

Analytical Techniques

Data obtained were analysed using means frequency distribution, and percentages. Budgetary tools like gross income, variable cost and Net income were utilized for socio-economic analysis.

$$GM = TR - TVC$$

$$NI = GM - TFC$$

Where:

GM = Gross Margin

TVC = Total Variable Cost

TFC = Total Fixed Cost

TR = Total Revenue

NI = Net Income

III. RESULTS AND DISCUSSION

Benefits of *Parkia biglobosa* products

Parkia biglobosa products were categorized into five groups namely; food supply, income generation, medicinal uses, energy supply, and other benefits (Figure 1). The seeds are widely utilized in the area as condiments for human consumption. Thus, 80 % of the respondents processed and utilized *Parkia biglobosa* seeds in the study area. Fagbemi (2012) observed that seeds of *Parkia biglobosa* serve as individual raw materials for the production of condiments popularly known in Nigeria as "Daddawa". These spices have been reported to contain high nutritional values of minerals, vitamins and oils (Tee *et al.*, 2009). Young leaves, shoots and

fresh pods from these species are also used in feeding livestock, which in themselves are food for man.

The study revealed in Figure one (1) that 72.5 % of the respondents generated income from *Parkia biglobosa*. Income is generated through sales of products; seeds (raw and processed), fuelwood, medicines, mortars/pestles and charcoals. Along the marketing channels, many marketing services like loading and offloading, storage, packaging and transporting offered employment opportunities and hence, income. The production of products from these species also offered employment opportunities to the people. The marketing agents render services from which they also derive a margin for their sustenance, income generated from these activities is utilized in solving family problems, like payment of schools fees, medical charges, electricity bills, and purchase of clothes.

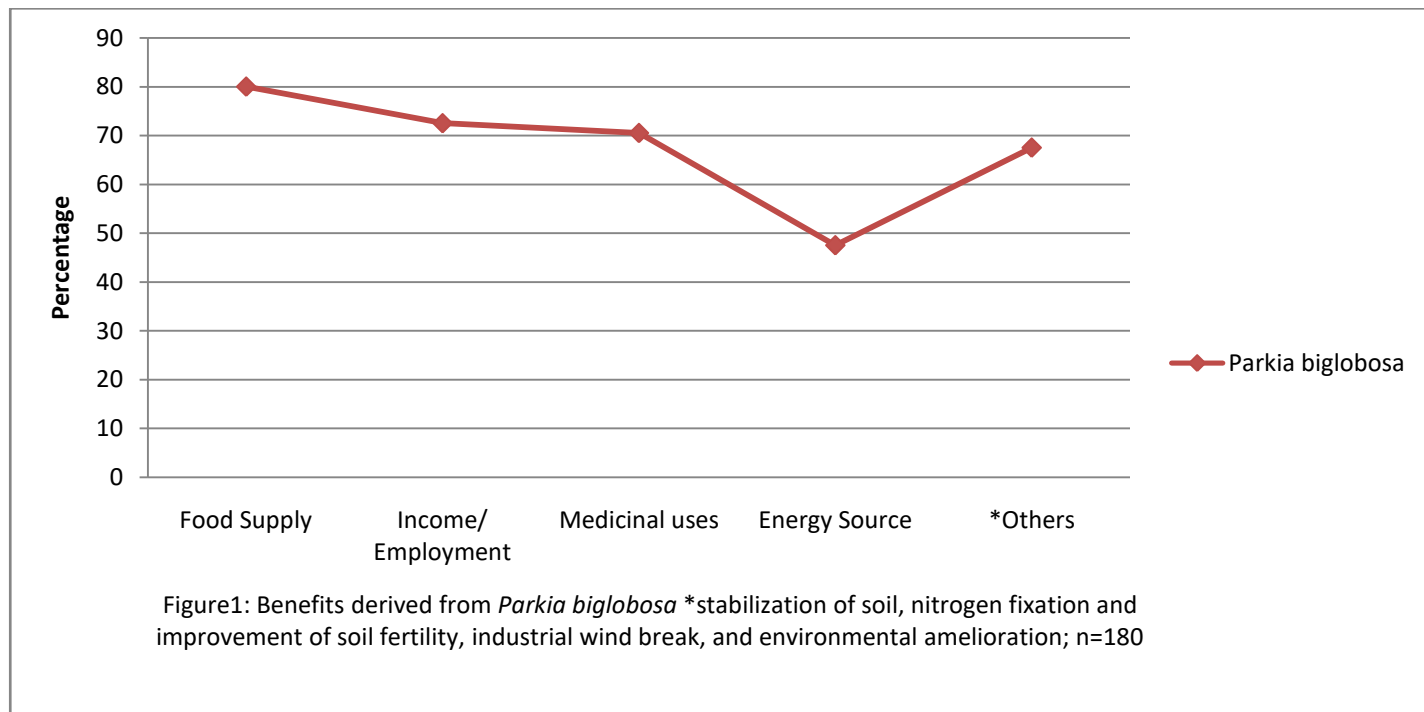
The study also revealed in Figure (1) that significant proportion of the respondents affirmed the use of *Parkia biglobosa* (70.5 %) for medicinal purposes. The respondents revealed that fermented seeds products from *Parkia biglobosa* are mixed with oil in warm water and taken for stomach ache and/or disturbances. Rashes, fire burns and other skin infections are also treated using the barks of these trees. Similarly, the husk is soaked in cold water and taken as astringent for diarrhea, while leprosy is prevented by the use of the young flower buds. The roots are useful in curing measles and piles. The result, therefore, agrees with the earlier assertions by Sofowora (2007) and Adebisi (2005) that NTFPs are very essential in solving health problems in most rural communities of Africa.

The respondents (47.5%) in figure (1) use *Parkia biglobosa* for household energy supply. They reported that fuel wood from *Parkia biglobosa* is efficient. It can burn slowly and also, produce strong flame amber that lasts longer once ignited. Fuel wood is relatively cheaper than the alternative energy sources like kerosene stoves and gas cookers; thus, it has advantage over the substitute energy sources this corroborates the earlier finding by Silviconsut (2011) and Amaza (1999) that low levels of income among fuel wood consumers make it difficult for the substitutes. It is the main energy source for the poor.

Products like mortars and pestle, farm tools handles, stools, chair arms and mallets are made from *Parkia biglobosa*. *Parkia biglobosa* also, provide environmental services. They are usually scattered on farmlands in the study area to enhance soil fertility through their potentials of fixing nitrogen into the soil. This increases the fertility of the soil, and the plants use it for their growth. Nutrients are also added to the soil through the decomposition of the debris and leaf falls from the tree. Farmers therefore, plant food crops around the tree on their farmlands to improve crop yields. According to Okoruwa and Oni (2012), increased crop productivity implies improved household food security, income and hence, purchasing power. The improvement in household food security, income

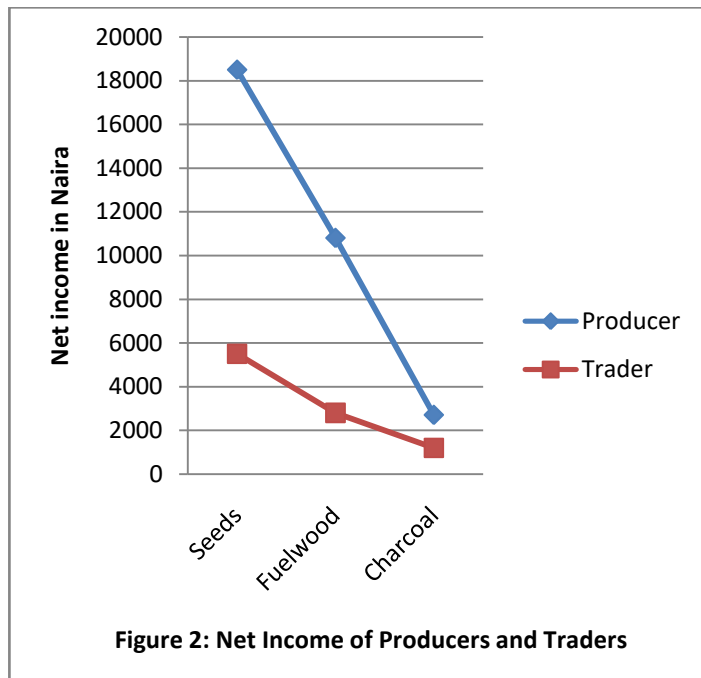
and purchasing power implies that their livelihood and poverty status is also improved. Income generation from *Parkia biglobosa* have many products (stabilization of soil, nitrogen fixation, improvement of soil fertility, industrial wind

break and environmental amelioration); however, only seeds, fuel wood, and charcoal were utilized in this study to determine net incomes. These products were purposively selected because of their more organized market structures.



The result presented in Figure 2 revealed the weekly net incomes from producers and traders of *Parkia biglobosa* products. The weekly net incomes from the producers of *Parkia biglobosa* products were; seeds (N18, 500), fuel wood (10,800), and charcoal (N2, 700). The aggregate monthly income to the producers was N128, 000.00. The income shows that *Parkia biglobosa* can reliably supplement cash incomes and livelihoods for the rural poor. These figures compare favorably with the current national monthly minimum wage of N18, 000.00 only.

The weekly net incomes generated by traders (Figure 2) revealed that seeds yielded higher net incomes of N5, 500.00 (N stands for Naira which is Nigeria’s National currency and unit of trade). This was followed by fuel wood N2, 800.00 and lastly, charcoal (N1, 200.00). The aggregate monthly incomes to traders were N38, 000.00. These values also, compare favorably with the current national monthly minimum wage. It was also observed that, most respondents had higher propensity for seeds trade than fuel wood and charcoal trade. This could be attributed to the relatively higher returns (net incomes) from seeds than the counterpart fuel wood and charcoal.



Based on aggregate monthly net income values, both producers and traders in the study area were adjudged living above the national monthly minimum wage. However, producers derived higher net incomes from their production

activities than the traders. The traders' benefits represent only the marginal values of products as they move from producers to the consumers.

Parkia biglobosa is beneficial to the people; it generated higher net income values and serve as viable alternative sources of income and livelihood. The cash incomes from the sales serve as a motivating factor for stakeholders to strive towards the sustainable development and utilization of these species and its products. Agreeing to this assumption, Oni (2006) and Master *et al*, (2014) asserted that producers are always willing to invest additional attention in improved product quality if they are motivated by increased returns and other tangible benefits.

IV. CONCLUSION

Seeds, fuelwood, charcoal, and medicines are the most essential product for livelihood sustainability in the study area. The people derived the following benefits from *Parkia biglobosa*; food supply and nutrition, income, household energy, medicinal service, improved soil fertility, environmental protection and raw materials for local crafts and other enterprises. However, much could still be harnessed from the species to improve the socio-economic needs and livelihood options of the people in the study area. The weekly net incomes of the producers and traders revealed that they are living above the national minimum wage for Nigerian workers.

To ensure the foregoing benefits are improved and sustained, the study recommends that efforts should be made to establish *Parkia biglobosa* plantations to supplement the natural population on farmlands. The study also, recommends more sustainable and improved harvesting and processing techniques to improve utility. Similarly, improved pricing policies, enhanced processing and marketing strategies for *Parkia biglobosa* products are also, recommended to ensure products value addition, furthermore, policy makers and extension service providers are encouraged to collaborate with farmers in other locations of the State and beyond to establish the tree crop on their farmland, this will improve the livelihood of farm families and boost cropping yield as observed from the result of this study.

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