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Research Paper

Effect of Commercial Harvesting of Seeds of *Parkia biglobosa* on the Resource Sustainability and Livelihood in Dawakin Tofa Local

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Parkia biglobosa (seeds) is one amongst other non wood forest products. *Parkia biglobosa* (seeds) are of commercial values that make a significant contribution to the socio-economic well being of rural people. However, continuous commercial harvesting of this resource in an unsustainable manner and absence of regeneration strategies for the resource can lead to being threatened or extricated. This study, therefore, focused on the effect of the commercial harvesting of seeds of *Parkia biglobosa* on resource sustainability and livelihood in Dawakin Tofa local government area of Kano State. Primary data were collected from wards in the local government. The data collected were analyzed using descriptive statistics. The result showed that 90.90% of the *Parkia biglobosa* harvesters were men, 49.18% fall within the age range of 31-50 years, 50.82% were married, 70.49% have no formal education, while 80.32% have farming as their primary occupation. Most of the harvesters (87.70%) obtained the seeds from their farmland, 66.39% are harvested for sale, 18.88% are sold and consume, 14.75% consume only. Also, 97.54% observed that resource is decreasing. Avoidance of cutting down of trees and increasing planting of the tress was suggested by 77.87%. The study has revealed that harvesting of *Parkia biglobosa* contributes to livelihood through the provision of income and employment in the area. To ensure the sustainability of this contribution, the harvesters of this resource should be encouraged to be more involved in tree planting especially the *Parkia biglobosa*.

Keywords: *Parkia biglobosa*, harvesting, livelihood and sustainability

INTRODUCTION

Parkia biglobosa (Jaeq) Benth C.F. Gaerth has been widely recognized as important indigenous multipurpose fruits with very high commercial and nutritional values in most ecological zones in Nigeria (Oni, 1999). Farmers deliberately maintain this tree on the farms mainly for its fruits and nuts. *Parkia biglobosa* is valued with array of multipurpose roles it plays in the sustenance of the rural economy thereby providing food, medicine, tanning, gum, windbreak, bee food, stabilization of degraded environment, livestock feed and many other domestic uses in their area of occurrence Rhodi *et al.* (2004).

Demand for this tree and its products are increasing and a large number of people are enhancing their income and livelihood through harvesting of seeds and fruits of the specie. These resources are being used by man and continue to play important roles in rural well being through harvesting, employment and trade as well as providing a wide range of other socio economic benefits. *Parkia biglobosa* is found within Sudano-sahelian zone with mean rainfall between 600-1000 mm. Awodola *and Okoro.* (1993) indicated that *Parkia biglobosa* is still ranked high among the list of forest products of commercial

value in the markets providing an array of benefits to those who manage the recourse. For example, the harvesting of *Parkia. biglobosa* at both subsistence and commercial levels carried out as part of livelihood strategies to secure provision of food and other essential subsistence goods and social security (Arnorld, 1995) health care needs, concern to reduce risk factors and local socio-cultural and spiritual considerations.

This is particularly important in relieving hunger periods in the agricultural cycle, can provide employment during slack periods and act as a buffer against risk and household emergencies because gathering and harvesting activities are being manage by communities near the forest resource with a greater proportion of the end-products revenues returning to those who manage the resource (Taylor, 1999).

Generally, Non wood forest products play important economic roles among various African communities in the Diaspora including Nigeria. For example an estimated One hundred and five tones of “bush plums” (*Dacrydes edulis*) and one hundred tones of “eru” (*Gnetum africanum* are exported from central African countries to Africans living in France and Belgium (Oni, 2006). The contributions of non-wood forest products cannot to be over emphasized when we consider the roles they play in the socio-economic well being of rural dwellers and in the nation at large.

It is therefore important to assess the effects of commercial harvesting of *Parkia biglobosa* as means of contributing to rural dwellers well being and sustainable utilization of forest resource.

Furthermore, assessing of such effects would help to secure necessary political and donor support for strengthened development of commercial harvesting of this resource and trade through it sustainable utilization of forest resource (Bonkoungou, 2002).

The unsustainable harvesting of fruits of *Parkia biglobosa* seeds has lead to reduced regeneration potentials and degradation of the resource (Oni, 1999).

This lead to calls for further research to determine the circumstances under which commercial harvesting of forest resources might indeed meet the objectives of contributing to improving the socio-economic well being of the rural poor while simultaneously ensuring the sustainable management of the resource (Figure 1).

The study therefore investigated the contribution of commercial harvesting of *Parkia biglobosa* seeds on the socio-economic wellbeing of the rural dwellers and sustainable use of the resource.

It would serve as tools for policy makers towards sustainable forest management of the resource in the study area.

The main objective of the study is to assess the effect of commercial harvesting of *Parkia biglobosa* seeds on the socio-economic well being of rural dwellers and resource sustainability in Dawakin Tofa local Government of Kano State.

Figure 1. *Parkia biglobosa* Tree.

MATERIALS AND METHODS

The study was conducted in Dawakin Tofa Local Government area of Kano state Nigeria, located between latitude $11°23^{1}26^{11}$ and $11°58^{1}11^{11}$N and longitude $7°15°0^{11}$ and $8^{o}11^{1}59^{11}$E with a population estimated of 247,875 and a total area of 479 km^2 (NPC, 2006). Its headquarters is located in Dawakin Tofa town of Kano state. The area has a mean annual rainfall of about 800 to 1000 mm that last usually for three to five months, the mean temperature ranges from 26°C to 33°C (KNSG, 2014). The Vegetation of the area is Sudan Savannah types which consist of a few scattered trees such as *Adonsonia digitata, Parkia biglobosa*, *Tamarindus indica, Balanite aegyptiaca* etc. *S*hrubs and grasses cover about 30 to 40% above the ground (Kabir, 2011). Farming and trading are the major occupation of the people in the area.

Data collection

A total of one hundred and forty questionnaires were used in the study area. The questionnaires contain four section: A, B, C and D. Section A is the socio economic characteristics of the harvesters, section B is the role of rural dwellers in sourcing harvested seeds of *Parkia biglobosa* .Section C is the benefits that accrue from harvesting activities while section D is the strategies for sustainability of the resource.

Sampling procedure

Four wards were selected out of twelve in the local government using random sampling technique; each of the selected wards was subdivided into five sections to have good representative samples. Seven *Parkia biglobosa* harvesters were randomly selected from each of the five sections of the selected wards, which make a total of one hundred and forty respondents.

Data analysis

Data collected were analyzed using descriptive statistical tools such frequency and percentages.

RESULTS

The research work was purposely conducted to examine the effects of commercial harvesting of seeds of *Parkia biglobosa* on the resource sustainability and the livelihood in Dawakin Tofa local government area of Kano State. For the attainment of the above aim, one hundred and forty questionnaires were administered and only one hundred and twenty two were retrieved. The data obtained were analyzed and presented according to the research objectives.

Socio-economic characterestics of the harvesters of *Parkia biglobosa*

The socio-economic characteristics of the *Parkia biglobosa* harvester in table1 below showed that 90.90% of *Parkia biglobosa* harvesters were male ,while 49.18% fall within the age 31-50 years and 50.82% were married .The result showed that 70.49% of *Parkia biglobosa* harvesters have no formal education. The result also indicated that the respondents take farming as their primary occupation in the study area with 80.32% and treading was their secondary occupation with 74.59%. Majority of the harvester were Muslim with 96.72% and they were Hausa by tribe with 58.19%.The result also reviled that majority of *Parkia biglobosa* harvesters are not participating in any association or organization with 95.08% (Table 1). The result showed that gender specializations pronounced that men were more involved in the harvesting of *Parkia biglobosa* activities across the study area. Age distribution showed that harvesters were in their active age, because the harvesting activities are tedious and only healthy able person can be involved in the activities. Most of the *Parkia biglobosa* harvester were well experienced in the business which they have doing for a long time. Result from the table below revealed that most of the harvesters of *Parkia biglobosa* in the study area were employed the local methods for harvesting the products. Result also indicated that majority of the *Parkia biglobosa* harvester obtained their fruits and seeds from farm land with 87.70% this due to the relative availability of the trees in the study area (Table 2).

DISCUSSION

The result showed that male was more involved in the harvesting of *Parkia biglobosa* activities across the study area. This is in line with findings of Aiyeloja *et al*., (2013) who also aid that drudgery works are usually carried out by men in the traditional cultural setting. This is contrary with finding of Akintan *et al.,* (2013) who reported that only women were exclusively involved in the marketing of *Parkia bigobosa* (locust bean) across the study area. This is confirmed the study of Arowosoge *and Popoola,* (2006) that income from Non Timber Forest Products (NTFP) marketing in Nigeria is generally regarded as being marginal and are thus traditionally considered to be women and children affairs The result showed that the ages of the respondents was between 31-50 years thus, showing that majority of the respondents were in the middle age categories. The result also implies that majority of the *Parkia biglobosa* harvester in the study area were in their vibrant youthful age strong enough to carry out the harvesting activities which can bring about a positive change to the standard of living of the people in their community. This is in line with findings of Tsoho *et al.,* (2013) that most of the farmers fall within the age category of 31-50 years.

Based on gender distribution, 90.90% of the respondents were male. This shows that male were involved fully in harvesting *Parkia biglobosa* in the study area because the work is tedious. This is because the area is predominantly Muslim where women are prohibited from taking part in the *Parkia biglobosa* harvesting activities. In agreement with findings of Aiyeloja *et al*., (2013) who also aid that drudgery works are usually carried out by men in the traditional cultural setting. Generally, in developing countries, male are usually involved in strenuous job like harvesting activities. This is contrary with findings of Herr *et al*., (2006) who conducted his research in Jepra, Indonesia and found that women are larger parts in the processing and harvesting of forest products in most of their villages. On marital status, majority of the respondents (56.39%) were married. This is attributed to the quest by married people to provide livelihood for their family members. This is in agreement with Afolayan, (1998) who reported that about 57% of married men were engage in processing and marketing of forest products. On educational background of the respondents, the result indicated that majority of the respondents had no formal education (66.39%). This is in agreement with Akintan et al. (2013) who reported that higher educational qualification is not a prerequisite

Table 1. Socio-economic characteristics of the harvesters of *Parkia biglobosa*s.

Parameter	Frequency	Percentage
Sex		
Female	05	4.10
Male	117	95.90
Total	122	100
Age group		
18 -20	22	18.0
21 -30	25	20.49
31 -50	60	49.18
>51s	15	12.29
Total	122	100
Marital Status		
Married	62	50.82
Single	32	26.23
Divorce	11	9.02
Widow	17	13.93
Total	122	100
Level of Education		
Non Formal Education	81	66.39
Primary	22	18.03
Secondary	14	11.47
Tertiary	05	5.09
Total	122	100
Secondary Occupations		
Trading	06	4.93
Farming	98	80.32
Artesian	01	0.81
Others	17	13.93
Total	122	100

Source: Field Survey, 2012

Table 2. Roles of rural dwellers in sourcing and harvesting of *Parkia biglobosa.*

	Frequency	Percentage
Methods of Harvesting		
Local Method	122	100
Modern Method	0	0.00
Total	122	100
Source of Seeds		
Forest	15	12.30
Free Areas	0	0.00
Farm land	107	87.70
Plantation	0	0.00
Total	122	100

for involvement in the trade and most of the respondents are illiterates while remaining are not educated beyond primary school. In terms of years of experience, the result revealed that 29.32% of the respondents fell within the experience range of 11-20 years. Studies have revealed that the longer the number of years spent in a vocation the more knowledge and skills are acquired that are necessary to improved production (Ajayi and Ojutiku, 2008; Alao and Kuje, 2012). In terms of the methods used during harvesting, it was discovered that majority of the respondent employed the local methods when harvesting. This is in accordance with findings of Falconer (1990) who reported that all *Parkia biglobosa* harvesters employed the local harvesting methods as a means of obtaining products (seeds).

Conclusion

The effect of commercial harvesting of *Parkia biglobosa* seeds on rural socio-economic well being and resource sustainability in Dawakin Tofa local government area has

been assessed and reported in this study. Men were more involved in the harvesting activities across the area because in rural areas they often dominate with forest gathering and harvesting of Non Timber Forest Products (NTFPs) for household products and income; it is seen as a profitable enterprise. Most of the *Parkia biglobosa* harvesters are well experienced in this business which they have been involved for a long period of time. This enables them to minimize loss. Most harvesters had *Parki biglobosa* trees on their farm lands from which they obtain their fruits and seeds for further processing. To promote the sustainability of *Parki biglobosa* the people have adopted local means of preserving or sustaining production by preventing indiscriminate livestock grazing, cutting down of the tree and bush burning which indirectly sustains the resources and harvesting enterprise.

Authors` Declaration

We declare that this study is an original research by our research team and we agree to publish it in the journal.

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