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## SOCIO-ECONOMIC IMPORTANCE OF *Pentaclethra macrophylla*. Benth IN ELEME LOCAL GOVERNMENT OF RIVERS STATE, NIGERIA

Eric, E. E., Nsien, I. B. and Akpan, U. F.

Forestry Research Institute of Nigeria, P.M.B 5054, Ibadan, Oyo State

Phone Number: 07067717999, email: estydaves@yahoo.com

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### ABSTRACT

*Pentaclethra macrophylla* is an agroforestry tree species that play enormous role in the livelihoods of rural and urban people in Southern region of Nigeria. This multipurpose tree species is diminishing due to urbanization, industrialization and increase in population in this region. The study assessed the socio-economic importance of *Pentaclethra macrophylla* in Eleme Local Government Area of Rivers State, Nigeria for policy action. Proportional sampling technique was used and 100 respondents were randomly selected from the two clans in the study area. Primary data were collected with the aid of structured questionnaires. Data collected were analyzed using descriptive statistics such as frequency count and percentages. The results of socio-demographic characteristics showed that 65% of the respondents in the study area were female while 35% were male. 58% were married and were between the ages of 21-30 years with a mean age of 25 years. The educational level was (58%) of secondary education. 55% of the respondents sourced the product from the wild and usually harvested this product during dry season. Factors affecting the socioeconomic use of this plant species were time-factor, transportation cost, and local tax. This study concludes that the respondents distribute *P. macrophylla* product for income purpose. They agree that the tree species also provide other functions such as provision of food, soil fertility, and environmental protection, cultural and medicinal benefits to promote their livelihood. In line with the above result, it is recommended that government at various levels and nongovernmental organization (NGOs) establish plantation with policy implementation to reduce illegal felling and encourage sustainably use of this tree species across southern states of Nigeria.

**Keywords:** *Pentaclethra macrophylla*, socio- economic importance, Eleme, policy action

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### Introduction

*Pentaclethra macrophylla* (Bentham) belongs to the family Leguminosae and the sub-family mimosoideae (Keay, 1989). The species is commonly known as oil bean tree. *P. macrophylla* are known in different parts of Nigeria by various vernacular names, namely: "Ugba or Akpaka" in Igbo land, "Akpara" in Yoruba and "Okpala" in Benin, Efik people in Cross River and Akwa Ibom States called its Ukana, the species in Ijaw and Itsekiri is known as Ukpakara and Ukpaghan respectively (Aju and Okwulehie, 2005). In Eket and Esit Eket the species is also known as Ukanna and Akrana respectively. It is the only species of the

genus in West Africa (Aju and Okwulehie, 2005).

Aju and Okwulehie, (2005) reported that the species distribution spanned throughout southern region, from west to the east bounded and lies within latitudes 4°15' and 8° N. According to Onwuchi (1998), the species is presently confirmed to the south – eastern states of Nigeria, an area representing 40% of its original range. In some eastern parts of Nigeria, *P. macrophylla* are growing in the wild mostly forest and farmland. The species has suffered decline in its range of distribution within the south region where it is mostly found due to population growth. The tree



grows wild in the forest or in farmlands where it has been carefully preserved by communities and individuals alongside their crops because of its valuable products and services (Aju and Okwulehie, 2005). *P. macrophylla* in fact commands high farmer patronages and preferences in the south-south geopolitical zone of Nigeria.

*Pentaclethra macrophylla* has contributed to household development in the south-eastern Nigeria in variety of ways, such as high protein contents in the food. The processed seeds are used as delicacy and food during cultural festivals in Igbo land. In Akwa Ibom State also, the processed fermented seeds are used to prepare a special soup called 'Otong' which people normally used during traditional marriage and cultural festivals. This agrees with the finding of Aju and Okwulehie (2005) which noted that, the fermented of seeds is always used in preparing a special kind of soup (Ofe Ugba). According to Aju and Okwulehie, (2005) it has excellent fuel properties and virtually every part of the tree is used in this regard, including the empty pods or husk. The seed and bark of *P. Macrophylla* has anti-inflammatory property which is used to produce local ointment for the treatment of insect bites, itches, cuts and wounds. Akah *et al.* (1999) reported that the leaves stem and bark of African oil bean seed contains phytochemical substance like phytoestrogen which is a natural supplement which has been linked to lower overweight and obesity.

The sales of multipurpose free products such as fruits, seeds timber provide income for the household. *P. macrophylla* seeds and its fermented products are major items of trade commonly sold in the both rural and urban markets. In Akwa Ibom it is sold in markets such as Obo-Annang, Eka-Oruk-Eshiet and Abak urban markets. In a study on farmers' perception of opportunities, preferences and obstacles of growing

multipurpose trees on farmland in Kogi State, Nigeria, Sale and Olujobi (2014) reported that 40% of the respondents were involved in Agroforestry trees growing because they provide income among others. *P. macrophylla* species has an important aesthetic value. The early colonial administrators acknowledged this importance by planting the tree along highways in southern parts of the country to provide shade to travelers. Oil bean tree has very wide spreading branches and as such the capability of breaking the speed of wind and thereby reducing wind disasters and erosion menace (Aju and okwulehie, 2005). *P. macrophylla* have contributed immensely in terms of economy, culture, medicinal values, environmental protection and mean of livelihood of the people in south-eastern state, Nigeria. Despite its contributions the species is still growing in the wild without effort to promote its conservation, plantation establishment and its contribution have not been recognized in the rural economy as source of income and livelihood improvement hence the need to formerly examine its socioeconomic importance for policy action.

## Materials and Methods

The study was conducted in Eleme Local Government Area of Rivers State. Eleme is located in East of the Port Harcourt Local Government Area. It covers an area of 138km<sup>2</sup> and lies within Latitude 4<sup>0</sup>50<sup>1</sup> and Longitude 7<sup>0</sup>03<sup>1</sup>. The estimated population growth rate is about 267,200 (Wikipedia, 2016). It has annual rainfall of 2500 mm with a mean value of 75% relative humidity in February and 80% in July (Okonkwo *et al.*, 2014). The mean minimum temperature is 25<sup>0</sup>C (ICRAF/IITA, 1994). Proportional sampling method was used for this study. One hundred (100) respondents were randomly selected from the two clans in the study area. Primary data were collected with the aid of structured questionnaires. Copies

of the questionnaires were administered to elicit information on socioeconomic importance of *P. macrophylla* from the distributors who lives in the study area. Data

collected were analyzed using descriptive statistics such as frequency count, percentages and chart.

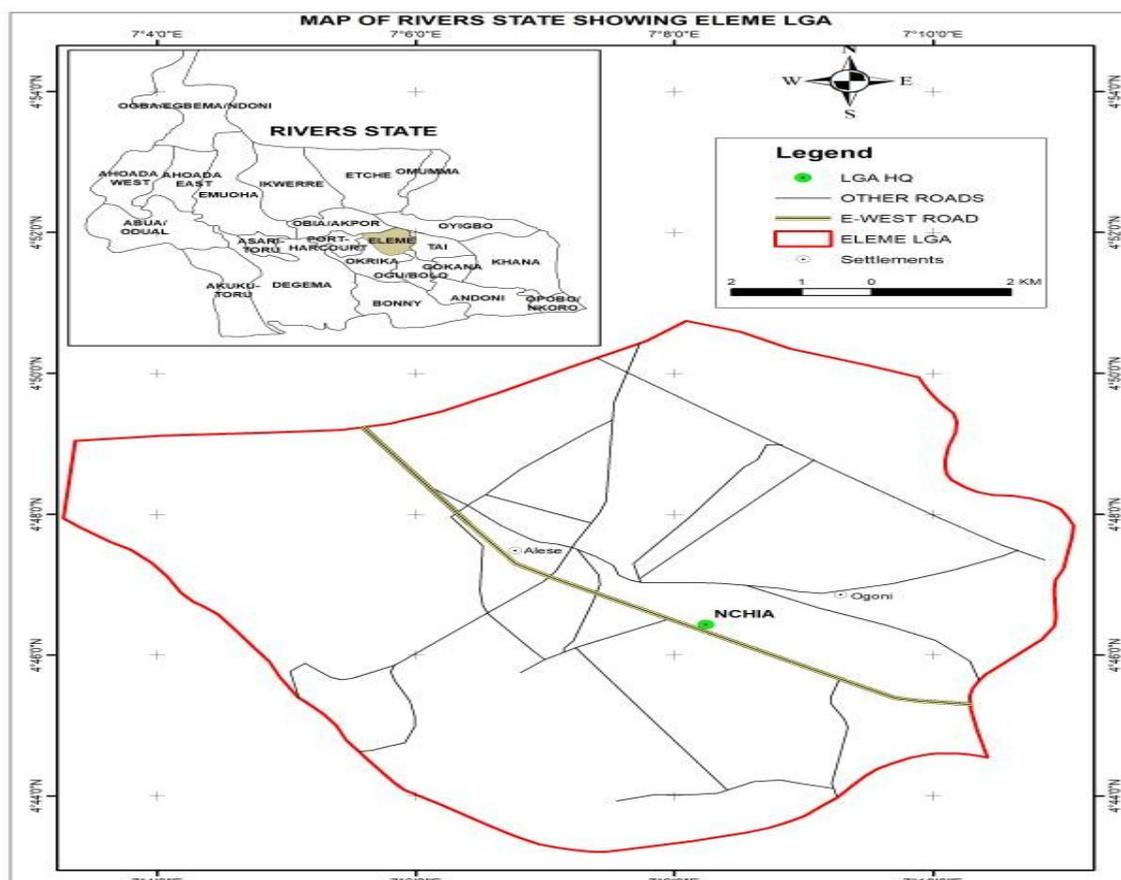


Fig 1: Map of Rivers State showing the location of Eleme Local Government Area

## Results and Discussion

### Socio-demographic characteristics of respondents

Socio-demographic characteristics of respondents shown in Table 1 revealed that 65% of respondents were female while 35% were male. This implies that female respondents were more in the sales and distribution of *Pentaclethra macrophylla* in the study areas. This implies that female participants were more in the sales and distribution of *P. macrophylla* in the study areas. The dominance of females in the distribution of this product could be due to

female involvement in petty trading especially cooked food. This result conforms to the study by Munonye (2010) whose study on African oil bean marketing in Owerri area revealed that the trade was dominated by women (90.44%). This result also agrees with the study by Adetunji and Adesiyani (2008) who observed that, women play active role in marketing agricultural produce. Those that were married among the respondents constitute 58% while 38% were single. About 40% of the respondents were within the age brackets of 21-40 years with a mean age of 25 years and 58% of the respondents were married indicating that



young married people market this product in other to generate income. This shows that *P. macrophylla* products distributors in the study area is dominated by agile young women and would have ability to engage in processing, preservation and sales of *P. macrophylla* products.

In reference to education, 8% had no formal education, 10% and 58% had primary and secondary education respectively while 20% and 5% of the respondents had tertiary education and other form of education respectively. The involvement of both educated and non educated respondents indicate that the respondents have traditional knowledge of the values and potentials of African oil bean.

The results of primary occupation showed that 50% of the respondents were traders, while 15%, 30% and 5% were farmers, civil servants and alternative income generation respectively. Furthermore, results in Table 1

also revealed that, 43% of the respondents were indigene while 57% were non-indigene from neighboring communities who came in search of greener pastures. This result is line with Masalilwa (2013) who reported that, how long a person lived in an area helped the individual to accumulate experience and knowledge about the important, uses and participating in NTFP's processing in a particular locality.

As shown in 75% of the respondents had a household size of 5-10 and above while 25% had household size of 1-5. This implies that the higher household size serve as added advantage for family sources of labour in the processing and marketing of *P. macrophylla*. Anyanwu (2014) noted that in Nigeria, children are considered as an essential part of the household's work force to generate household income and insurance against old age.

**Table 1: Socio-demographic characteristics of respondents**

Socio-demographic characteristics	Frequency	Percentage
<b>Gender</b>		
Male	35	35.00
Female	65	65.00
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Marital Status</b>		
Married	58	58.00
Single	38	38.00
Widow/Widower	04	4.00
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Age Range</b>		
<20	17	17.00
21-40	40	40.00
41-60	31	31.00
>60	12	12.00
Mean	<b>25</b>	
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Educational Qualification</b>		
No Formal Education	08	8.00
Primary	10	10.00
Tertiary	20	20.00
Secondary	58	58.00



Other Formal Education	04	4.00
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Occupation</b>		
Farming	15	11
Civil servant	30	30
Trading	50	55
Others	05	4
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Indigeneship</b>		
Indigene	43	43
None Indigene	57	57
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Household Size</b>		
1-5	25	25.00
6-10	75	75.00

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<b>Total</b>	<b>100</b>	<b>100</b>
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**Distribution of respondents according to their source of products and purpose of use**

The results presented in Table 2 showed that 55%, 40% and 5% of respondent's sourced the product from the wild, market and other means such as walk way or office resident respectively. This finding is in line with Archinewhu, (1996), who noted that the tree species grows wild and have never been cultivated by individual to any extent by

individuals around homesteads or commercially in plantations. In terms of usages of *P. macrophylla*, 30%, 40%, 12%, 10%, 6% and 2% of the respondents used it for marketing purpose, home consumption, traditional/cultural, medicine values, environmental protection and soil fertility respectively. The result showed that most respondents distributes the seedproducts of *P. macrophylla* for marketing purpose which attributes to their revenue generation

**Table 2: Distribution of Respondent according to their Source of Products and Purpose of use**

Variable	Frequency	Percentage
Market	40	40.00
Wild	55	55.00
Other	05	5.00
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Purpose for Use</b>		
Marketing	30	30.00
Home consumption (Food)	40	40.00
Medicinal purpose	10	10.00
Traditional/cultural	12	12.00
Environmental protection	06	6.00
Soil fertility	02	2.00
<b>Total</b>	<b>100</b>	<b>100.00</b>



### Harvesting and Selling Seasons by the Respondents

Results in Table 3 revealed that, 75% of respondents usually harvest the product during dry season due to abundance and availability within this period, while 20% and 5% of respondents do harvest it during rainy season and none respectively. More

than two third (65%) of respondents agreed that *P. macrophylla* were mostly sold on non-market days as compared to 35% on market days. This could be attributed to high demand and inadequate supply of the product as it is sold on daily bases by petty traders along road sides as fast food.

**Table 3: Harvesting and Selling Seasons by the Respondents**

Variable	Frequency	Percentage
<b>Best Harvesting Season</b>		
Dry season	75	75.00
Rainy season	20	20.00
None	05	5.00
<b>Total</b>	<b>100</b>	<b>100.00</b>
<b>Marketing period</b>		
Market day	35	35.00
None Market day	65	65.00
<b>Total</b>	<b>100</b>	<b>100.00</b>

### Income and perceived contribution of *P. macrophylla* to livelihood sustainability

As shown in Table 4 82% of the respondents agreed that they distribute and sell the seed products of *P. macrophylla* for income purpose while 18% disputed about it. This implies that *P. macrophylla* contribute to their economic well being. This result corroborates with the study by

Amaechi, (2015) who reported that oil bean marketing is profitable. Majority (96%) of respondents also agreed that the plant produce sustained livelihood of the people within south-eastern States. This agrees with the study of Olaitan *et al.*, (2016) who reported that non timber forest products (NTFPs) had contributed to the livelihood of people in Southern region of Nigeria.

**Table 4: income and sustainability to livelihood by respondents**

Variable	Frequency	Percentage
<b>Income by</b>		
Yes	82	82.00
No	18	18.00
<b>Total</b>	<b>100</b>	<b>100.00</b>
<b>sustainability to livelihood</b>		
Yes	96	96.00
No	04	4.00
<b>Total</b>	<b>100</b>	<b>100.00</b>

### Reasons for consumption and problems encountered by respondents by their involvement in *Pentaclethra macrophylla* processing and sales

As shown in Table 4 55% of the respondents used the product of this plant

species known as African salad as their main food, 35% used it as supplement and 6% as appetizer while the least respondents 4% did not use the product. This agrees with the finding of Aju and Okwulehie (2005) who noted that the fermented of seeds from *P macrophylla* tree is usually used in



preparing a special kind of soup known as (Ofe Ugba). Also, the problems encountered by the respondents were time factor, transportation, and local tax (60%), 25%, and 5% respectively while 10% encountered all the factors. This implies that the

respondents spent much time in processing this food as the edible seeds involve tedious and careful processes such as fermentation, soaking, boiling, slicing and addition of ingredients before it can be taken as food.

**Table4: Reasons for consumption and problems Encountered**

Variable	Frequency	Percentage
<b>Consumption</b>		
Supplement	35	45.00
Appetizer	6	8.00
Main food	55	61.00
None	4	4.00
<b>Total</b>	<b>100</b>	<b>10</b>
<b>Problems</b>		
Local Tax	5	13.00
Time factor	60	61.00
Transportation	25	4.00
All	10	22.00
<b>Total</b>	<b>100</b>	<b>100</b>

### Conclusion and Recommendation

Based on the finding of this study, it is concluded that the respondents involved in distribution/sales of *Pentaclethra macrophylla* seed products for the purpose of income generation and food consumption to sustain their livelihood and also, few of the respondents use the tree species for other purposes such as medicinal purpose, traditional/cultural, environmental protection and soil fertility. They sourced for the tree product from the wild and the most problems they encountered in the business was time they spent on processing and transportation of this product. It is therefore recommended that government at various levels and nongovernmental organization. (NGO) create more awareness on it agroforestry and environmental benefits and consider plantation establishment with policy implementation to reduce illegal felling of this trees species across southern states of Nigeria and this will help to promote conservation and regeneration of this agroforestry plant as the nation is in the age to imbibe agroforestry

system. Moreover, plantation establishment will help to reduce environmental problem such as pollution, soil erosion as Rivers State is one of the most polluted areas in Niger Delta, Nigeria. Research should also be carried out to modify its method of food processing.

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