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EVALUATION OF THE CONTRIBUTIONS OF SELECTED NON-TIMBER FOREST PRODUCTS TO FOOD SECURITY AND INCOME GENERATION, IN IMO STATE, NIGERIA

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ABSTRACT

The study examined the contributions of three non-timber forest products (NTFPs) to household food security and income generation in rural areas of Imo State. The research methods involved field visits and the use of semi-structured questionnaire. Nine hundred (900) copies of the research instrument were administered to rural households in the State using multi-stage and systematic sampling procedures. Data were analyzed using descriptive statistics, Z-test and Foster-Greer-Thorbecke (FGT) metric. The result revealed that 98% of the respondents consumed the three NTFPs as food and 1.7% used the species for medicinal purposes with only 4.0% utilizing the NTFPs as means of income generations in Imo State. The consumption of the three species (i.e. Pentaclethra macrophylla, Monodora myristica and Gnetum africanum) as foods were highest in Owerri and Okigwe Zones (98.5%) and least in Orlu Zone (96.6%). A higher percentage (6%) of the respondents utilized the species for income generation in Owerri Zone compared to 3% and 2.5% recorded for Orlu and Okigwe Zones respectively. For medicinal purposes, the uses of the three NTFPs were limited with only 2.7%, 1.7% and 0.7% confirming their utilization for the purpose in Okigwe, Orlu and Owerri Zones respectively. There were significant differences in mean annual incomes of those that traded in the NTFPs and those that did not (P<0.05), and those who traded in the NTFPs recorded a higher mean annual income compared to non-NTFPs traders. The poverty severity in Owerri, Orlu and Okigwe Zones were 7%, 9% and 12% respectively, which implies that for the rural households to live a moderately poor life, leaving above 2 USD a day, additional ₦ 10,972.12, ₦ 14,881.08 and ₦ 11,476.83 will be required to the current annual mean income, respectively.

Keywords: Consumption, income generation, livelihood, poverty severity, agricultural zones

INTRODUCTION

There has been growing awareness about the importance of non-timber forest products (NTFPs) in recent time, not only for the role they play in the subsistence economy, but also for their potential and real importance to the economies of many developing countries. They are sources of varieties of food that complement what is obtained from agricultural production. According to Bryon and Arnold (1997), majority of rural households in developing countries and a large proportion of urban households depend on plants and animal products extracted forest to meet their nutritional needs.

Pentaclethra macrophylla, *Monodora myristica* and *Gnetum africanum* are species of immense values in eastern Nigeria, especially Imo State, where they play fundamental roles in the socio-economic well-being of the rural people. These

species as NTFPs have potentials of ameliorating the prevailing food insecurity while improving the level of income generation as major forest food sources in the area. The Seeds of Pentaclethra

macrophylla are eater boiled or roasted, the wood is suitable for fuel-wood and charcool marking, the flowers produced are attractive to bees for honey production. The leaves when boiled are used for traditional, human and veterinary medicine. The wood is hard and suitable for poles and general carpentary, Traditionally pestles and mortars are made from it. Obog (2007). Monodora myristica is a species of calabash nutmeg, the edible seeds yield a nutmeg. Flavoured oil which is used in West Africa for cooking (Eggeling, 2002). Essential oils from the seed of Monodora myristica is used in pharmaceutical and dental preparation (Talalaji, 1999). Gnetum africanum (Okazi). Is a traditional vegetable consumed by many Nigerians. Due to its social, cultural, medicinal, nutritive and economic values, this most rural and even urban communities of South eastern Nigeria (Ibeawuchi et al, 2008).

In spite of the aforementioned, there is little published information on the economic impacts of the three selected NTFPs in the study areas. An important consideration therefore in rural household of Imo State is capturing the overall contributions, these valued species make to food security and income generation. This will enable comparison to be made between the contribution of these species to the economy of the rural areas

of Imo State and other rural household economics activities.

MATERIALS AND METHODS

The study was conducted in Imo State, Nigeria. A multi-stage sampling technique was adopted for this study. Three stages were involved. The first stage involved the grouping of the State into three agricultural zones, which are Owerri, Okigwe and Orlu zones. In the second stage, each of the zones was further divided into Local Government Area (LGAs). Two LGAs were then purposively chosen from each zone based on the prevalence of the three species, *Pentaclethra macrophylla*, *Monodora myristica* and *Gentum africanum* (Fig. 1). In the third stage, ten (10) rural communities were selected from each of the LGAs for the study. Fifteen respondents, who were stakeholders in utilizing and/or engaged in business associated with the three species, and were above eighteen (18) years of age, were interviewed using semi-structured questionnaire in each of the study location. A total of nine hundred copies of questionnaire were used for the study.

Statistical Analysis

Data were analyzed using descriptive statistics such as means frequency, percentage, charts and graphs as well as Z-test for comparing mean household incomes between the two categories of respondents (traders and non-traders of NTFPs). Foster-Greer-Thorbecke (FGT) metric was used to analyze the poverty severity in the three agricultural zones of the state.

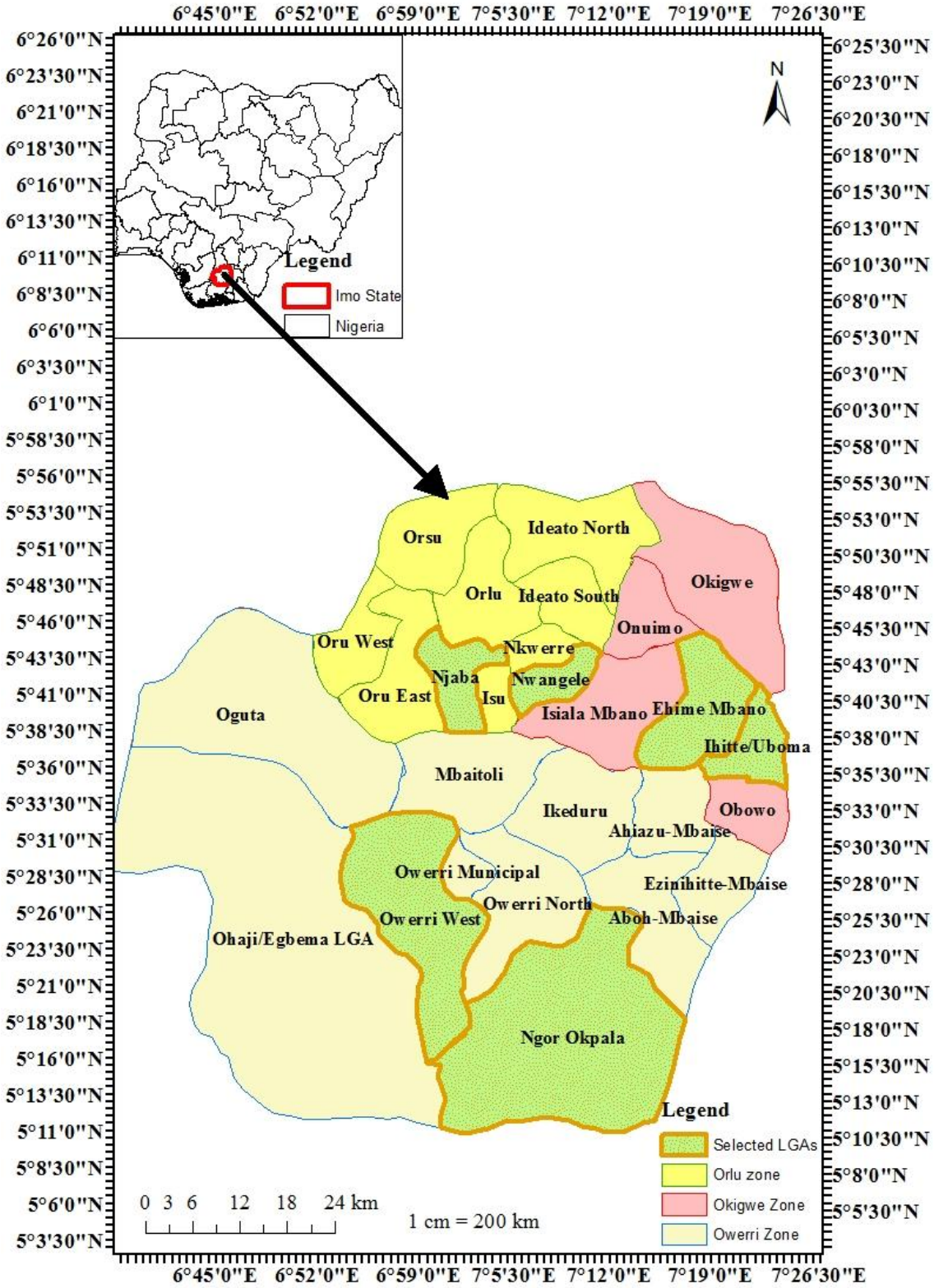

Fig. 1: Map of the study area showing the selected LGAs

RESULTS

Table 1 presents the demographic characteristics of the respondents in the study area. About 53% of the respondents were males while 46.6% were females. The result revealed that 29% of them had primary school education, 34.3% had secondary school education with only 7% being educated up to tertiary level, while 24% had no formal education. The result further revealed that 3.1% of the respondents were single, 76.2% were married and 7.9% divorced with 6.6% and 6.2% of them were widows and widowers, respectively. About 25% of the respondents in the area were farmers, 33.4% of them were traders. Only 13.6 and 9.8% of the respondents were civil servant and local craftsmen/women, respectively while about 18% engaged in forest-related activities. About 29% and 71% of the respondents, who traded in the species for income generation, were males and female respectively.

The utilization patterns of the three NTFPs in the three agricultural zones of the state are presented in Table 2. In Owerri Zone, 98.5%, 0.7% and 6.0% of the respondents utilized the three species (i.e. *P. macrophylla*, *M. myristica* and *G. africanum*) as food, medicine and as sources of incomes, respectively. In Orlu Zone, 96.6%, 1.7% and 3.0% of the respondents utilized the three NTFPs as food, medicine and for income generation, respectively. With respect to Okigwe Zone, 98.5%, 2.7% and 2.5% of the respondents used the species for food, medicine and income generation, respectively. For the pooled data (i.e. the whole of the state), about 98% of the respondents consumed the three NTFPs for food and 1.7% used the species for medicinal purposes with only 4.0% utilizing the NTFPs as sources of income generations.

Table 1: Demographic characteristics of the respondents in the study area

Variables	Opinion	Utilized as food		Income generation	
		Frequency	%	Frequency	%
Gender	Male	454	53.4	10	29.4
	Female	397	46.6	24	70.6
	Total	851	100	34	100
Education	Primary	259	29.0	-	-
	Secondary	307	34.3	-	-
	Tertiary	63	7.0	-	-
	No formal education	220	23.7	-	-
	Total	849	100	-	-
Marital status	Single	26	3.1	-	-
	Married	647	76.2	-	-
	Divorced	67	7.9	-	-
	Widow	56	6.6	-	-
	Widower	53	6.2	-	-
	Total	849	100	-	-
Occupation	Farming	212	24.8	-	-
	Trading	285	33.4	-	-
	Civil Servant	116	13.6	-	-
	Local crafting	84	9.8	-	-
	Forest-based activities	156	18.3	-	-
	Total	853	100	-	-

Table 2: Patterns of the selected NTFPs utilizations and income in the study area

Zone	Utilization								
	Food			Medicine			Income		
	Opinion	Freq.	%	Opinion	Freq.	%	Opinion	Freq.	%
Owerri	Yes	260	98.5	Yes	2	0.7	Yes	18	6.0
	No	4	1.5	No	298	99.3	No	281	94.0
	Total	264	100	Total	300	100	Total	299	100
Orlu	Yes	257	96.6	Yes	5	1.7	Yes	9	3.0
	No	9	3.4	No	295	98.3	No	290	97.0
	Total	266	100	Total	300	100	Total	299	100
Okigwe	Yes	261	98.5	Yes	8	2.7	Yes	7	2.5
	No	4	1.5	No	292	97.3	No	285	97.5
	Total	265	100	Total	300	100	Total	292	100
Pooled Data	Yes	778	97.9	Yes	15	1.7	Yes	34	4.0
	No	17	2.1	No	885	98.3	No	856	96.0
	Total	795	100	Total	900	100	Total	890	100

The income distributions between the two categories of the respondents (i.e. NTFPs traders and non-NTFPs traders) in the three agricultural zones of the State are presented in Table 3. In Owerri Zone, the mean annual income for the respondents, who did not trade in the NTFPs was ₦140,069.18±14,200.25. For the respondents in this category for Orlu and Okigwe zones, the mean annual incomes were ₦116,539.73±19,410.86 and ₦105,800.11±12,053.19, respectively. The NTFPs traders had mean annual incomes of ₦173,420.00±53,700.17, ₦138,500.91±67,239.83 and ₦142,217.81 ± 25,600.95.For Owerri, Orlu and Okigwe respectively. Details of the income distribution for the two categories are shown in Table 3.

Table 4 presents the results of the Z-tests for comparing mean household annual incomes between the two categories of respondents in the three agricultural (i.e. Owerri, Orlu and Okigwe) zones with Owerri Zone having the highest mean annual income for both categories. In all the zones, the results of the Z-tests revealed that there were significant differences between the mean annual incomes of those that did not trade in the selected NTFPs and those that traded in the species ($P < 0.05$). As a means of household income generation, the result showed that people that traded in NTFPs recorded a higher mean annual income than those that did not trade in any of the three species. For the two categories of respondents, the mean annual incomes were highest in Owerri Zone.

Table 3: Income distribution for two categories of respondents in the study area

Zone	Non-NTFPs trader	NTFPs trader	Overall mean (₦)
	Mean annual income (₦)	Mean annual income (₦)	
Owerri	140,069.18±14200.25	173,420.00±53700.17	156,744.59±33,950.21
Orlu	116,539.73±19410.86	138,500.91±67239.83	127,520.32±43,325.35
Okigwe	105,800.11±12053.19	142,217.81±25600.95	124,008.96±18,827.07

Table 4: Z-test for comparing income levels of the two categories of respondents

Zone	Variables	Mean ± SD (₦)	df	Z_{cal}	P-value
Owerri	Non-NTFPs trader	140,069.18±14200.25	285	5.13	0.000
	NTFPs trader	173,420.00±53700.17			
Orlu	Non-NTFPs trader	116,539.73±19410.86	274	43.91	0.000
	NTFPs trader	138,500.91±67239.83			
Okigwe	Non-NTFPs trader	105,800.11±12053.19	296	12.06	0.000
	NTFPs trader	142,217.81±25600.95			

α = 0.05; $Z_{tab.}$ = 1.96

The results of the Foster-Greer-Thorbecke (FGT) metric for Owerri, Orlu and Okigwe Zones were 0.07, 0.09 and 0.12, respectively, which showed that the poverty severity among the respondents in Owerri, Orlu and Okigwe Zones of Imo State were about 7%, 9% and 12% respectively. This implies slightly high poverty incidences among the households in the three agricultural zones. This is evident from the fact that many of the rural households' income per annum was below the poverty line of 2 dollars a day.

DISCUSSION

The three NTFPs were consumed in the three agricultural zones of the study area regardless of genders, education and occupations. Nevertheless, the utilization of the species for income generations was gender-sensitive. There were far more females, who generated incomes from the sales of the three NTFPs than there were males. This agrees with the finding of Ogunbanjo and Aina (2013), who noted that women are found to be more involved majorly in harvesting, processing and selling of NTFPs in most part of Nigeria compared to their male counterparts. The finding also corroborates the work of Malleson *et al*. (2014), who stated that NTFPs provided many women in remote settlements of Cameroon and Nigeria with one of the few means of accumulating money for other purposes.

In the three agricultural zones of the state, the NTFPs were described as most important in times of food shortages as coping strategies to combat food insecurity and associated nutritional problems. This corroborates the reports of Corbett (1988) and Compton *et al*. (2010), who noted that wild food consumptions offer a coping mechanism or adaptive strategy for increased household food security when times are bad.

The highest mean annual incomes recorded in Owerri Zone may be attributed to the fact that the business is more lucrative in the zone than the other two zones. Hence, the involvement of more people in income-generated activities in the area. Moreover, it was observed that sales of the three

NTFPs in the three zones boosted the annual incomes of people, who traded in them. This agrees with the findings of Aju (2014), who reported that a wide range of forest products, which rural people gather, produce and trade in, contribute to income generation and employments. According to Kilby and Liedholm (1986), small forest-based gathering and processing enterprises provide one of the largest sources of non-agricultural employments and incomes to rural people at a time when rural households have to look to non-farm employment and income for a growing share of their total livelihoods. The cases were not different in the three agricultural zones of the study area as most gatherers attested to this fact.

The poverty severity of 7%, 9% and 12% for Owerri, Orlu and Okigwe Zones mean that the rural households in the zones will need 7%, 9% and 12% of their current annual income in addition to the current annual incomes in order to be moderately poor. The poverty severities in the three zones of the State were lower than the 13% reported by Abur and Torruam (2012) for Makurdi LGA of Benue State. This implies that the study area had lower poverty incidences compared to what obtained in Benue State, perhaps due to better livelihood options. And besides, the study area is a part of Niger-Delta, and expectedly, the cash flow is higher, which may have translated into a better standard of living. According to Idowu and Salami (2011), an improvement in standard of living through injection of better cash would reduce poverty incidence or severity. For the rural households to live a moderately poor life, that is, having $2 a day,

CONCLUSION

The three non-timber forest products contributed immensely towards food security as well as improving income generations among the rural populace in Imo State. Priority should therefore be given to increased productions through plantation establishment with the three NTFPs as parts of the major components, while encouraging value additions through provisions of soft loans to encourage traders and other interested persons to fully participate in activities related to the production and development of the three species. In order to ensure continued availability of the species, there is need for a better investment in large-scale production on sustainable basis through concerted efforts of all stakeholders. Policies targeted at reducing the poverty level in this area should also be put in place. Finally, government should provide enabling environment for access to micro-credits at reduced interest rates.

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