DETERMINANTS OF THE QUANTITY OF NON-TIMBER FOREST PRODUCTS COLLECTED FROM BLOCK A AND GOLF COURSE FORESTS OF INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE (I. I. T. A), IBADAN, OYO STATE, NIGERIA

Abstract

The study was carried out to access the determinants of the quantity of non- timber forest products collected from Block A and Golf course forests of International Institute of Tropical Agriculture (I.I.T.A). Samples of one hundred and five respondents were randomly selected *and interviewed using well structured* interview schedule*s*. Data collected were analysed using descriptive statistics and multiple regressions. The study showed that all the respondents involved in the collection of NTFPs were female and native of the area with the average age of 51 years. Majority were not educated, married with 5-7 household size, 11-20 years of experience and are closer to forest by 2-5 km. The study further revealed that eight types of NTFPs which includes firewood, bamboo, palm kernel, water leaf, pseudocolocynth, gum tree, Oil bean seed and drum tree were collected with the total weight of 12,385 kg. Firewood formed the highest quantity of NTFP collected. There was significant relationship between the quantity of NTFPs collected and the factors that affecting it. Labour cost, transportation cost and extent of sales were significant at 1%, cost of tools and household size were significant at 5% while years of experience was significant at 5% probability level thus play a crucial role in the quantity of NTFPs collected. The problems militating against the collection of NTFPs were cost of transportation, restricted access to the forest, seasonality and perishability of the NTFPs. Thus, it can be concluded that IITA forest serves as a reservoir of NTFPs which are useful for food, medicine, cooking and wrapping or preservation of food items. The study therefore recommends that studies should be conducted on the domestication and conservation of NTFPs that are useful especially for medicinal purposes and for food to reduce pressure on the forest and ensured continuous supply and availability to the people that needs them.

Key words: I.I.T.A forests, NTFPs, determinants, descriptive statistics, multiple regression, respondents, randomly

Introduction

Non-Timber Forest Products (NTFPs) are an important source of livelihoods for the rural populations all over the world. Rural communities depend on forest for fulfilling subsistence needs like food, fodder, litter, and fuel wood. Different studies done by different organizations reveal that a significant proportion of the world rural population is highly dependent upon forest resources. For instance, according to an estimate by World

Commission of Forestry and Sustainable Development, 350 million depend almost entirely for their subsistence needs on forests, and another 1 billion depend on forests and trees for fuel wood, food, and fodder (WCFSD, 1999). Similarly, the World Bank (2001) reports that 1.6 billion depend to varying degrees on forest for their livelihoods, with 350 million living in or near dense forests depending on them to a high degree. In the same line, the Food and Agriculture Organization (FAO) estimates that 80 percent of the population in the developing countries relies on NTFPs for nutritional and health needs (FAO, 2003). Though the numbers estimated by different organizations may vary, these studies suggest that there is quite a significant proportion of population living in or nearby the forests and depending upon it to some degree. Forest products act as buffers during the times of hardships and are often used as safety nets where the rural community depends on these resources to bridge the hunger gaps (Neumann and Hirsh, 2000; Sills, *et. al.*, 2003; Belcher, 2005; Maharjan and Khatri Chhetri, 2006).

Non-Timber Forest Products (NTFPs) consist of goods of biological origin derived from the forest, other wooded land and trees outside the forest (FAO, 1999). Shiva and Mathur, (2007) referred to all products obtained from plants of forest origin and host plant species yielding products in association with insect and animals or they are parts and items of mineral origin except timber as Minor Forest Products (MFP) or Non-Wood Forest Products(NWFPs) or Non-Timber Forest Products (NTFPs). Non-timber forest products (NTFPs) are wild plant and animal products harvested from forests, such as wild fruits, nuts, edible roots, honey, palm, medicinal plants, snails, and so on. Nigerians collect these products daily and many according to Shomkegh and Tem (2008) engage in collection and selling of these NTFPs as a means of livelihood. Agbogidi and Okonta (2003) stated that a large proportion of the rural population earn their livelihoods from the collection or extraction and sale of non-timber forest products thereby improving the quality of life and standard of living of rural population living near forest lands. In addition, a large proportion of rural household depend on forest products to meet some of their nutritional needs, and a considerable number obtain part of their income from the sale of tree products.

Non- Timber Forest Product (NTFPs) contributes significant to the livelihood of Nigeria's fast growing population. Research carried out by Bisong and Ajale (2001) pointed out that there is a heavy dependence on NTFPs in the western part of Nigeria while in the southern part, women depend heavily on NTFPs. For many women this is the only way to earn an independent income (Van Rijsoort and De Pater, 2000). Generally, many Nigerians depend on NTFPs for food, fibre and herbal medicines. In recent times there has been a reasonable and noticeable shift from the earlier preference in favour of orthodox medicine to greater acceptance of traditional (herbal) medicines in Nigeria as in many other countries worldwide (Akunyili, 2003). Over 90% of Nigerians in rural areas and 40% in urban areas depend partly or wholly on traditional medicine (Osemeobo and Ujor 1999). It has gained global attention due to its contribution to the household economies and food security. Nweze and Igbokwe, (2000) asserted that about 80 percent of the population of developing countries use NTFPs to fill health and nutritional needs.
The Block A forest and Golf forest of the International Institute of Tropical Agriculture (IITA) is a repository of useful timber and non- timber forest products **(**Ariyo, *et. al.*, 2014) and is serving as a source of livelihood for villagers living in adjoining villages of the perimeter fence of I.I.T.A for over forty years. The villagers are allowed into the forest to collect non- timber forest products (NTFPs) such as water leaf, vegetables, palm products, fire wood, medicinal plants and other forest products

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89 However, despite the importance of non-timber forest products in sustaining livelihood and
90 poverty smoothening in rural communities, especially those living on the forest fringes of
91 Nigeria. There has been little or no empirical research on the determinants of quantity of non-
92 timber forest products collected from the forest especially Block A and Golf course forests of
93 International Institute of Tropical Agriculture (I.I.T.A), Ibadan, Oyo state, Nigeria..

94
95 **Objectives of the Study**
96 The broad objective of this study is to access the determinants of the quantity of non- timber
97 forest products collected from Block A and Golf course forests of International Institute of
98 Tropical Agriculture (I.I.T.A), Ibadan, Oyo state, Nigeria.
99 The specific objectives are to:
100   i.   describe the socio-economic characteristics of the respondents.
101   ii. identify the types, parts, quantity and uses of non- timber forest product collected.
102   iii. assess the determinants of the quantity of non- timber forest products collected.
103   iv. identify the problems facing the collectors of non timber forest products.

104
105 **Hypothesis of the study**
106 The hypothesis of the study is stated in the null form is as follows:
107 Ho: There is no significant relationship between the quantity of non- timber forest products
108 collected and the factors that affecting it.

109
110   **Methodology**
111 **The study area:** The study area is International Institute of Tropical Agriculture (IITA)
112 forests, Ibadan, Oyo State, Nigeria. IITA is located at longitude 7^0 30' 8''N, latitude 3^0 54'
113 37''E and 243m above sea level (Tenkouano and Baiyeri, 2007). In 1965, the Federal
114 Government of Nigeria allocated some 1000 hectares of land for the establishment of the
115 main IITA campus. By 1987, the clearing of land for research plots, housing and other
116 facilities was largely completed and it was decided to preserve the remaining land as an
117 informal forest and nature reserve. Today the forest and nature reserve at IITA covers nearly
118 300 hectares and are in three locations. The first is found at west bank area and the size of the
119 forest is about 150 ha, the second is located at Block A and the size is about 50 ha, the third is
120 at golf course area covering about 100 ha. The forest at west bank area is under active
121 protection by the rangers while forest at Block A and Golf area serves as extractive reserves
122 where rural women who once lived in the villages where IITA is presently located are
123 allowed to collect forest resources (NTFPs) such as firewood, water leaf, bitter leaf, palm
124 (nuts, fruits, fronds) etc.

125
126 **Land use history**: Prior to the acquisition of land by IITA through the Federal Government
127 of Nigeria, the most extensive land use pattern was arable and tree crop farming and about
128 3000 people lived in about twenty eight villages scattered in this area.

129
130 **Climate**: The site falls within humid tropical lowland region with two distinct seasons: the
131 longer wet season and shorter dry season. The wet season last for eight months and it extends
132 from March to October while the dry season last for four months from November to
133 February. The rainfall pattern is bimodal with an annual total which ranges from 1,300-
134 1,500mm most of which falls between May and September. The average daily temperature
135 ranges between 21^0C and 23^0C while the maximum is between 28^0C and 34^0C. Radiation is
136 about 5285MJ/m^2/year. Mean relative humidity is in the range of 64% to 83% ((Tenkouano
137 and Baiyeri, 2007).
138

3

Vegetation: The natural vegetation in this area could be classified as tropical semi-deciduous forest with various pockets of vegetation types ranging from derived savanna, secondary forest and riparian types. According to Ezealor (2002), the area resembles mature Guinea-Congo lowland rainforest with scattered emergence of trees which include *Ceiba*, *Milicia* and *Terminali*a spp. Large clumps of bamboo (*Bambusa vulgaris*) are common; stands of *Raphia farinifera* are found along watercourses while scattered oil-palms *Elaeis guineensis* grow in both low-lying and the relatively better-drained upland areas. Thickets of climbers grow in openings where the secondary nature of the forest is most apparent.

Method of Data Collection: One hundred and five respondents were selected randomly from the population of collectors of non- timber forest products from IITA forests. Data were collected from the respondents by interview method with the aid of structured questionnaire. The respondents were tagged and monitored for the name, types and part of NTFPs collected for a whole month. The quantity of NTFPs collected were weighed and recorded for each of the respondents.

Data Analysis: Data were analyzed using descriptive statistics to summarize the data collected. Multiple regression analysis involving the use of Ordinary Least Square (OLS) was employed to determine the functional relationship between the dependent variable (Y) (quantity of NTFPs collected by the respondents) and set of explanatory variables (X) affecting the collection of NTFPs. Three functional forms were tried, namely; the linear function, the semi log and the double log function. The best functional form based on coefficient of multiple determination- R^2, F –statistics, t – ratio and a-priori expectations as well as the number of significant variables was chosen to explain the relationship. The data involving the null hypothesis was tested at 10%, 5% and 1% level of significance to determine the probability of association between variables. The model in its general form is;

$$Y = F (X_1 X_2 X_3 X_4 X_5 \text{------} X_{12} + \mu_i) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad 1$$

The explicit of these functions are as follow;

Linear function; $Y = b_o + b_1 X_1 + b_2 X_2 + b_3 X_3 \text{-------} + b_{12} X_{12} + \mu_i \dots\dots\dots\dots\dots\dots\dots \quad 2$

Semi log function; $Y = b_o + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 \text{------} + b_{12} \log X_{12} + \mu_i \dots\dots\dots 3$

Double log: $\log Y = b_o + b_1 \log X_1 + b_2 \log X_2 \text{----} + b_3 \log X_3 \text{-------} + b_{12} \log X_{12} + \mu_i \dots\dots 4$

Where

bo = Constant, b_1 to b_{12} = regression coefficient, μ_i = error terms

X_1 = Cost of tools (₦), X_2 = Labour cost (₦), X_3 = transportation cost (₦), X_4 = Nearness of respondents to the forest (Distance in km), X_5 = Age respondents (Years), X_6 = Household size (Actual number of household members), X_7 = Main occupation, X_8 = Level of education (years of schooling), X_9 = Marital status, X_{10}= Market location (Rural area= 1, 0 otherwise), X_{11}= Years of experience in the collection of NTFPs (Years), X_{12}= Extent of sale (level of patronage: Average number of patronage per day)
Y = Quantity of NTFPs collected (Kg).

Results and Discussion

Socioeconomic Characteristics of the Respondents: Table 1 revealed the socio- economic characteristics of respondents. All the respondents involved in the collection of non- timber

189 forest products from Block A and Golf course forests of IITA are female. This agreed with
190 the findings of Heltberg, *et. al*., (2000) which stated that female are mostly engaged in
191 NTFPs collection, while males are involved in other income generating activities.
192
193 The average age of the collectors was 51 years. The implication of this is that most of the
194 respondents are slightly above their active age with little ability of going about the gathering
195 of NTFPs. Alabi, *et. al*., (2011) in her findings described age of 20-50years as the active age
196 group. However, most of the respondents were within the age (16-64) defined by FAO (1992)
197 as economically productive in population. 80.95% had the highest age range of 41- 60 years
198 while 13.33% and 5.72% falls between 20-40 and 61-80 years respectively. Studies have
199 found that young people may be more dependent on forest products than elderly people
200 (Godoy and Contreras, 2001; Mamo *et. al*., 2007), is because the young may have multiple
201 uses for the forests and forest product collection is labor intensive. On the other hand, elderly
202 people may not risk going into the forest to undertake forest activities particularly because
203 they may not have the strength to carry out forest-related activities and thereby rely on less
204 arduous activities (Cavendish, 2000; McElwee, 2008a, 2008b).
205
206 The percentage of the collectors that were married was 78.10% while 21.90% were widowed.
207 In terms of the household size, 52.38% had household size of 5-7. 26.67% had 8-10 while
208 20.95% had 2-4 household size, the collection of NTFPs will serve as financial support to the
209 husband and children. Larger households collect more forest products and clear more forest
210 compared to smaller households primarily because the large households have more workers
211 and more people to feed (Almeida, 1992). Studies have found that larger families have a
212 greater demand for natural resources and more labor to fulfill this demand, leading to higher
213 forest income (Almeida, 1992; Adhikari *et. al*., 2004). However, it appears that household
214 composition, gender and age structure are more important than the mere numbers.
215
216   Majority (82.86%) of the respondents were not educated while only 17.14% had primary six
217 educations. According to Raufu, *et. al*., (2012) and Pierce *et. al*., (2002), the primary
218 requirements to work with NTFPs is knowledge of product, their uses and location, and the
219 time, energy and mobility to access the products. These requirements are fulfilled with
220 increasing years of education among the respondents rather than formal education. Studies
221 find that education makes NTFP collection increasingly unprofitable due to the higher
222 opportunity costs of labor. Moreover, education creates opportunities for off-farm
223 employment, self employment and better job facilities outside the forest area that reduce
224 dependence on forest resources (Godoy and Contreras, 2001; Adhikari, *et. al*., 2004).
225
226 The years of experience of non- timber forest products collectors from IITA forests shows
227 that 48.57% had between 11-20 years experience while 32.38%, 12.38% and 6.67% had 1-10,
228 21-30 and 31-40 years of experience respectively. The main occupation of the respondents
229 was crop farming which accounted for 62.86% while only 37.14% were engaged in trading.
230 The minor occupation of all the respondents was NTFPs collection. All the respondents were
231 native of the area and once had villages on the land area where the present IITA is located.
232 The nearness of the forest to the respondents shows that 60% and 20% were near to the forest
233 by 2 km and 4 km while 12.38% and 7.62% were closer to the forest by 3 km and 5 km
234 respectively. The extent of sales of NTFPs by the respondents reveals that 58.10% and
235 40.95% had between 1-3 and 4-6 customers while only 0.95% has between 7-9 customers.
236 92.38% consumed and at the same time sold the NTFPs collected from the forests, 4.76%
237 sold the products while only 2.86% consumed the NTFPs collected.
238

Types, parts and quantity of non- timber forest products collected: Table 2 showed the types, parts and quantity of non timber forest products collected from Block A and Golf course forests of I. I. T. A as at the time of the study. The type of NTFPs collected includes firewood, bamboo, palm kernel, water leaf, pseudocolocynth, gum tree, Oil bean seed and drum tree. The parts of NTFPs collected are stems, branches, seeds, leaves and pods. The total quantity of non timber forest products collected was 12,385 kg. Firewood recorded the highest quantity of 9,967 kg. NBS (2007) stated that 92% of rural households use firewood as their main cooking fuel, whereas over 50% of the urban population uses charcoal in many sub-Saharan countries. This was followed by bamboo and palm fruits/ kernel with 2,150.50 kg and 138.50 kg. The quantity of water leaf, pseudocolocynth and gum tree was 98.90 kg, 20.50 kg, and 5.50 kg respectively. Other such as oil bean seed and drum tree had 2.6 kg and 1.5 kg collection. Some of these non timber forest products were collected in and at the edges of block A and Golf course forest. The NTFPs collected were used for cooking, production of palm oil and palm kernel oil, food, medicine and wrapping of food items. According to Gadgil *et. al.*, (1993); Berkes *et. al.,* (2000) and Kala, (2005), the historical dependency of human beings on forests is still intact either directly or indirectly for fulfilling their various needs, such as food, fodder, fiber, medicine and cultural epistemic. The age-old traditional interactions of people living in forests and forest fringes with their surrounding natural resources, ecosystems and environment have developed some specific knowledge on the use of forest and forest resources (Gadgil *et. al.*, 1993; Berkes *et. al.,* 2000, Kala, 2005). Most of these forest dwellers are tribal communities who collect various forest produce for their consumption and income generation. Despite the influence of modernization, cultural diffusion and market forces, most of the traditional practices, are still in existence within tribal communities (Kala, 2005 and 2009). Being the worshipper of nature and natural resources, many cultural practices of these forest dwellers depend on the forests resources (Kala, 2010). Besides, the collection and consumption of forest produce are determined by certain cultural norms and institutions. The selection of plant species for use depends on the knowledge and experiences however, the dependency or exploration of forest resources is determined by the richness or poorness of the produces or the availability of the resources (Kala, 2009). The creativity, evolution and accumulation of knowledge depend on the locality, availability and opportunity to access the resources.

Determinants of the quantity of non timber forest products collected: The determinants of the quantity of non timber forest products collected from Block A and Golf course forests of I. I. T. A was tested by subjecting some measured variables to regression analysis. Three functional forms were used. These include the linear, semi-log and double log function. The results are presented on table 3. The tree functional forms tried were examined in terms of the significance of each functional form as indicated by F- statistics, the magnitude of the coefficient of multiple determinations (R^2), a-priori expectations which include the magnitude and sign of the coefficient. Using the above criteria, the Linear function was chosen as the lead equation based on the statistical criteria such as coefficient of multiple determination- R^2, value of F-ratio, t-ratio, a-priori expectations as well as the number of significant variables. Result of the analysis revealed that the coefficient of variable X_1 (cost of tools), X_2 (labour cost), X_3 (transportation cost), X_4 (nearness to the forest), X_5 (age of respondents), X_9 (marital status), X_{10} (market location) and X_{12} (extent of sales) were positively related to the quantity of non timber forest products collected in accordance with the a-priori expectation. Thus, 0.091, 0.312, 0.325, 0.051, 0.064, 0.027, 0.025 and 0.570 unit increase each in X_1, X_2, X_3, X_4 X_5, X_9,X_{10} and X_{12} will bring about one unit increase

287 respectively in the quantity of non timber forest products collected by the respondents. On the
288 other hand, the coefficient of variables X_6 (household size), X_7 (main occupation), X_8 (level
289 of education), and X_{11} (years of experience) were found to be negatively related to the
290 quantity of non timber forest products collected by the respondents. That is 0.143, 0.061,
291 0.045 and 0.081 unit increase in each X_6, X_7, $X_{8,}$ and X_{11} will result in corresponding one unit
292 decrease respectively in quantity of non timber forest products collected by the respondents.

293 The R^2 value of 0.705 means that the estimated (explanatory) variables included in the model
294 explained 70.5% of variation in quantity of non timber forest products collected by the
295 respondents while the remaining 29.5% was due to error term. Variables X_2 (labour cost), X_3
296 (transportation cost) and X_{12} (extent of sales) were significant at 1% probability level while
297 variable X_1 (cost of tools) and X_6 (household size) were significant at 5% level of probability.
298 Variable X_{11} (years of experience) was significant at 10% probability level respectively. The
299 coefficients of significant variables are explained thus:

300 The coefficient of cost of tools represented by variable X_1 had a positive sign in accordance
301 with a priori expectation and significant at 5 percent probability level. This implies that good
302 tools will enhance the collection of more NTFPs.

303 The coefficient of labour cost (X_2) had a positive sign in accordance with a priori expectation
304 and significant at 1 percent probability level. This implies that the higher the number of
305 labour employed the higher the quantity of NTFPs that will be collected.

306 Transportation cost coefficient (X_3) had a positive sign in accordance with a priori
307 expectation and significant at 1 percent probability level. The higher the quantity of NTFPs
308 collected the higher will be the cost of transportation.

309 The coefficient of house hold size (X_6) had negative sign in contrary to a priori expectation
310 but significant at 5 percent probability level. This means that most of the respondents are not
311 making use of members of their family in the collection of NTFPs. This also reflects the fact
312 that NTFPs collection is not the main occupation of the respondents, they have other sources
313 of income from crop faming and trading.

314 The coefficient of years of experience (X_{11}) had negative sign in contrary to a priori
315 expectation but significant at 10 percent probability level. This implies decreasing the years
316 of experience of the respondents increases the quantity of NTFPs collected from the forest.

317 The coefficient of extent of sales (X_{12}) had positive sign in accordance with a priori
318 expectation and significant at 1 percent probability level. This implies that the higher the
319 number of customers the higher the quantity of NTFPs collected by the respondents.

320 The F-value of 34.056 obtained shows that the overall equation (model) was statistically
321 significant at 1% probability level. With this result, the null hypothesis (Ho) which says there
322 is no significant relationship between the quantity of non- timber forest products collected
323 and the factors that affecting it is rejected, implying that the variables included in the model
324 determines the quantity of non timber forest products collected by the respondents. This
325 simplifies the regression equation to: $Y = 0.091\ X_1{}^{**} + 0.312\ X_2{}^{***} + 0.325\ X_3{}^{***} + 0.051\ X_4$

$$+ 0.064\ X_5 - 0.143\ X_6{}^{**} - 0.061\ X_7\ \text{-}0.045\ X_8 + 0{,}027\ X_9 + 0.025\ X_{10} - 0.081\ X_{11}{}^{*} + 0.570\ X_{12}{}^{***} + \mu_i$$

Problems facing the collectors of non timber forest products: The problems facing the respondents in the collection of non- timber forest products as presented on table 4 includes restricted access to the forests, seasonality of NTFPs, transportation cost and perishability of the products. All the respondents (33.33%) complained of restricted access to the forests that is they are only allowed to enter into the forest twice a week and they are not allowed to enter into west bank forest. 26.98% and 22.54% of the respondents emphasized that the seasonality and high transportation cost of NTFPs is a problem. Only 17.47% of the respondents had problem of perishability of NTFPs.

Conclusion

Based on the findings of the study, it can be concluded that all the respondents involved in the collection of NTFPs from Block A and Golf course forests of I. I. T. A are female; all were native of the area and once had villages on the land area where the present IITA is located. They had the highest age range of 41- 60 years and average age of 51 years. Majority of them are married with 5-7 household size, 11-20 years of experience in the collection of NTFPs and are not educated. The main occupation of the respondents was crop farming and trading while NTFPS collection serves as the minor occupation. All the respondents were near to the forest by 2-5 km, having 1-9 customers per day, consumed and at the same time sold the NTFPs collected from the forests. From table 2, it can be concluded that eight types of NTFPs are collected from the forest with total weight of 12, 385kg per month. From table 3, it can be concluded that the major determinants of the quantity of NTFPs collected are labour cost, transportation cost and extent of sales. Others include cost of tools, household size and years of experience of the respondents in the collection of non- timber forest products. Based on the data presented on table 4, it can be concluded that restricted access to the forests, seasonality, high transportation cost and perishability of NTFPs were the problems facing the collectors of NTFPs. Thus, it can be concluded that IITA forest serves as a reservoir of NTFPs which are useful for food, medicine, cooking and wrapping or preservation of food items

Recommendation

1. The quantity, types and frequency of collection of NTFPs from the forests should be moderated to prevent degradation and loss of the forest for future generations.

2. Studies should be conducted on the domestication and conservation of NTFPs that are useful especially for medicinal purposes and for food to reduce pressure on the forest and ensured continuous supply and availability to the people that needs them.

3. Government at all levels and relevant research institute should made efforts in training the people on the domestication of these NTFPs so as to achieve sustainability

Table 1: **Socio-Economic Characteristics of Non- Timber Forest Products Collectors**

Socio economic characteristics	Frequency	Percentage
Sex		
Male	-	-
Female	105	100

Age		
20-40	14	13.33
41-60	85	80.95
61-80	6	5.72
Marital Status		
Married	82	78.10
Widowed	23	21.90
Household size		
2-4	22	20.95
5-7	55	52.38
8-10	28	26.67
Level of Education		
Primary six	18	17.14
Not educated	87	82.86
Years of Experience of NTFPs collection from IITA forests		
1-10	34	32.38
11-20	51	48.57
21-30	13	12.38
31-40	7	6.67
Main occupation		
Crop farming	66	62.86
Trading	39	37.14
Nativity		
Yes	105	100
No	-	-
Nearness to Forest (Km)		
2	63	60
3	13	12.38
4	21	20
5	8	7.62
Extents of sales		
1-3	61	58.10
4-6	43	40.95
7-9	1	0.95
Uses of NTFPs		
Sold and consumed	97	92.38
Sold	5	4.76
Consumed	3	2.86

370   Source: Computed from Field Survey Data, 2016.

9

371 Table 2: **List of Non Timber Forest Products, parts and quantity collected from IITA forest as at the time of survey**
372

S/n	Scientific name	Common name	Yoruba name	Part collected	Uses	Quantity collected (kg)
1	*Adenopus breviflorus* Benth.	Pseudocolocynth, Lagenaria	Tagiri	Pod	Medicine	20.50
2	*Bambusa vulgaris*	Bamboo	Oparun	Stem	Cooking	2,150.50
3	*Cordia millenii*	African cordial, Drum tree	Omo	Leaves	Wrapping	1.5
4	*Elaeis guineensis* Jacq.	Palm fruit & Palm kernel	Eyin, Ekuro/Ira	Palm seed	Palm Kernel	138.50
5	*Pentaclethra macrophylla* Benth.	Oil bean seed	Pala, Igbogho	Leaves	Wrapping	2.6
6	*Talinum triangulare*	Waterleaf	Gbure	Leaves	Food	98.90
7	*Tetrapleura tetrapetra* (Schum. & Thonn.) Taub.	Gum tree	Aidan	Pod	Medicine	5.50
8		Firewood	Igi Idana	Stem, branches	Cooking	9,967
	Total					12, 385

373 Source: Computed from Field Survey Data, 2016.

374 Table 3: **Determinants of the quantity of non timber forest products collected from IITA forest by the respondents**

Model	Coefficients				
	Unstandardized coefficients		Standardized coefficients		
	B	Std error	Beta	t	Significant
Constant	4.444	13.474		0.330	0.742
X_1 (Cost of tools)	0.049	0.022	0.091	2.218	0.028**
X_2 (Labour cost)	0.073	0.014	0.312	5.251	0.000***
X_3 (Transportation cost)	0.309	0.042	0.325	7.346	0.000***
X_4 (Nearness to forest)	1.134	1.042	0.051	1.088	0.278
X_5 (Age of respondents)	0.198	0.200	0.064	0.987	0.325
X_6 (Household size)	-1.791	0.688	-0.143	-2.605	0.010**
X_7 (Main occupation)	-2.942	2.609	-0.061	-1.128	0.261
X_8 (Educ. Level)	-0.425	0.617	-0.045	-0.689	0.492
X_9 (Marital status)	1.466	2.396	0.027	0.612	0.541
X_{10} (Market location)	1.709	3.817	0.025	0.448	0.655
X_{11} (Years of experience)	-0.215	0.131	-0.081	-1.643	0.102*
X_{12} (Extent of sales)	9.626	0.798	0.570	12.065	0.000***
Y= Quantity of NTFPs Collected					
F- Statistics	34.056				0.000***
R^2	0.705				
Adjusted R^2	0.685				

375 Source: Computed from Field Survey Data, 2016

376

377 *** Significant at 0.01, ** Significant at 0.05, * Significant at 0.1

378

379 Table 4: **Distribution of respondents based on problems encountered in the collection of**
380 **non- timber forest products**
381

S/n	Problems	Frequency*	Percentage
1	Restricted access to the forest	105	33.33
2	Seasonality	85	26.98
3	Transportation	71	22.54
4	Perishability	55	17.47

382 Source: Computed from Field Survey Data, 2016.
383 * = Multiple responses
384

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