

The Impact of Non-Timber Forest Products on the Livelihood of Rural Dwellers in the South-Western Zone of Ekiti State, Nigeria

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Abstract: The study examined the impact of Non Timber Forest Products (NTFPs) in the livelihood of the rural dwellers in the southern zone of Ekiti State, Nigeria. Three villages from within the vicinities of each of the three major towns in Ekiti South West Local Government area were randomly selected for this study. Fifty households in each village were randomly selected making a total of 450 households sampled in the study. Primary data were collected through semi structured questionnaire matrix administered to the head of each selected household. The results obtained revealed that the respondents were diverse and cut across the socio-economic classifications. These classifications were not pre-requisites to their consciousness on NTFPs. Eight important NTFPs were identified in the study area and valued for foods, soup or soup ingredients or spices or condiments, medicine, fuel wood, weaving, wrapping and sweeteners. A tripartite mode of NTFPs utilization was established in this study. While 14% of the respondents claimed exclusive consumption of the products, 7% claimed exclusive use of the products as sources of income while a vast majority of the respondents used the products for both subsistence and economics as sources of income. Three levels of respondents' involvements were observed for NTFPs in the study area. These included collections, processing and marketing, each of which was dominated by females. Though the amount of income generated by considerable proportion of the respondents in this study is low compared to the national minimum wage yet serve as safety net for the poor and offer opportunity for employment. Diverse sources, including household area, household farms free area, and forest, abound for NTFPs species in the study area. Most of the species domiciled in the household farms were cultivated while those of free areas and forest were mostly wildlings. Constraints abound on transportation, storage and spoilage that greatly affect the contributions of the NTFPs in the study area, sustainable strategies that could ameliorate these problems and further boost the contributions of NTFPs were proposed.

Keywords: Non-timber forest products, rural dwellers, conservation, Nigeria.

INTRODUCTION

The roles of Non-Timber Forest Products (NTFPs) on the livelihood of rural dwellers in Ekiti State, Nigeria cannot be underestimated particularly in this era of economic recession in the country. NTFPs encompass a wide variety of items derived from the forest other than timber. They are goods of biological origin other than timber from natural, modified or managed forested landscapes [1]. They include wild plants and animals harvested from forest, savannah and other natural vegetation [2]. These include fruits and nuts, vegetables, medicinal plants, gum and resins, bamboo, rattans and palms, fibres, grasses, leaves, mushrooms, honey, fodder, fibres and craft materials [3-6].

Considerable number of people throughout the world makes extensive use of biological products from the wild [7]. Thus the NTFPs play important role in the

livelihood of millions of rural and urban dwellers across the globe [8, 9]. Indeed, about 80% of countries in developing world depend on NTFPs for their primary wealth and nutritional needs [10]. In these countries, the NTFPs are part of household subsistence strategies providing macronutrients, carbohydrates, fats and protein or other essential micronutrients such as various minerals [11]. They are harvested for subsistence and commercial use either regularly or during the time of need [12, 13], thereby providing a wide range of benefits to the local people.

NTFPs are also used as household utensils and agricultural equipment which encompasses forest products such as fibres, baskets, furniture, bow and arrow, dye, paint, varnish glue [14]. They have cultural value, for example in Nigeria, *Cola nitida* has significant attention during marriage and burial ceremonies and even in everyday entertainment of

important visitors where it is offered as valuable gift on such important occasions, it is also used in appeasing gods [15]. They also constituted important sources of raw materials to many industries ranging from paper products, toothpicks, food and medicine for the cure of man and livestock diseases [16, 17].

Despite the tremendous benefits derived from the NTFPs in supporting the rural dwellers financially, it is perceived as less important to national development in developing countries [12]. They are considered as minor or secondary forest products [17] while attention has been concentrated on timber forest products. In the recent times, NTFPs have attracted global interest [18] due to their potentials for improvement of rural livelihood. Thus, the study being reported here aimed to identify the NTFPs in the study area and determine their contributions to the household economy of the indigenous community of the study area.

MATERIALS AND METHODS

The Study area

The study was conducted in Ekiti State, Nigeria (Figs.1 and 2) which is located in the south western part of the country. The state is populated by the Ekiti tribal group, an important subgroup of the Yoruba. Ekiti State is mainly an upland zone rising over 250 meters above the sea level and has a rhythmically

undulating surface. It has a population of 2,398,957 [19] and occupies 6,353Km² area of land. The climate is tropical with raining season between April and October and dry season between November and March. Temperature ranges between 21⁰ and 28⁰C with high humidity. The climate favours the production of agricultural crops as farming is the major occupation of the people in the state.

METHODS

The study was carried out in Ekiti South West Local Government Area of Ekiti State (Fig-2). The Local Government area comprised of three major towns namely Ilawe, Igbara-Odo and Ogotun-Ekiti, each of which possessed numerous villages. Three villages from within the vicinities of each of the three major towns were randomly selected for this study. These villages were far from urban influence and were located within 10 kilometres radius from the major town.

Fifty households in each village were randomly selected making a total of 450 households sampled in the study. A total of nine villages were used for the study. The selected households were classified as poor, middle and rich using monthly income and types of houses the respondents lived as the criteria for the classification of economic status.

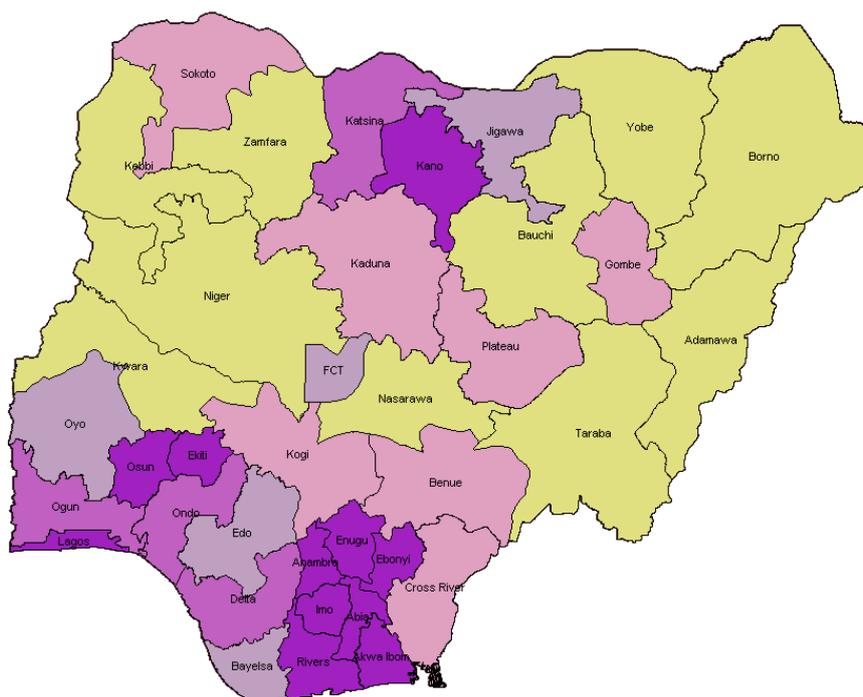


Fig-1: Map of Nigeria showing Ekiti State

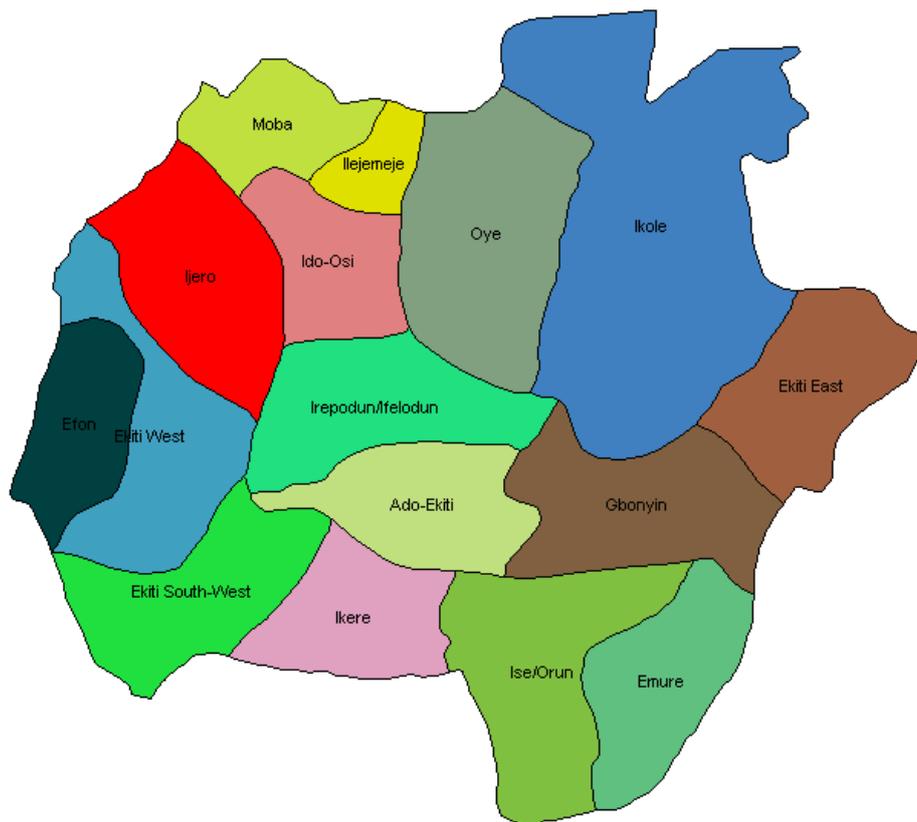


Fig-2: Map of Ekiti State showing the Study Area

The income derivable from NTFPs by each household in each village was determined. Also the gender specific roles in their collections, processing and marketing as well as the various sources of their collections were examined.

Data collection

Primary data were collected through semi structured questionnaire matrix designed in English Language and was translated to local language. The questionnaires were administered to the head of each selected household and thus gathered information on the respondents' socio-economy, types of NTFPs in the study area, their collection, processing and marketing. The income generated from NTFPs by each household was determined. The various sources where the NTFPs were derived were determined. The constraints encountered on them and conservation strategies that would enhance their sustainability, based on the indigenous knowledge of the respondents, were prescribed.

Group interviews, with each group comprising of five respondents, were conducted to determine group consensus on the responses obtained during the individual interviews.

Data analysis

The data obtained were subjected to descriptive statistics in form of frequency and percentages.

RESULTS AND DISCUSSION

The socio-economic characteristics of the respondents revealed that respondents were diverse and cut across the socio-economic classifications. Most of them (83%) were of the age range of 21 to 60 years while 13% and 4% of the respondents were below 20years and above 60 years respectively. 69% of the respondents were females, and were mostly adherents of Christianity (47%) and Islam (48%). They were mostly literates (76%) and married (69%). The socio-economic classifications were found not to be pre-requisites to the respondents' awareness on NTFPs. Similar assertions were made by some previous researchers [20, 21]. Indeed, it was emphasized that the livelihood of the indigenous community depends on the NTFPs [22]. Earlier reports observed that the indigenous communities were actively involved in gathering, processing and marketing of NTFPs [17, 23].

Table-2 revealed the values of the NTFPs in the study area. Eight important products were identified. 11 species were valued for food. This was made up of 4 flora and 6 fauna species and a fungus. 12 flora species, belonging to 7 families were valued for soup or soup ingredients or spices or condiments. 11

species, belonging to 10 families were valued for medicine. 6 flora species were valued for fuel wood, 3 flora species for weaving, a flora species each for wrapping and palm oil and a fauna species as sweetener. This lends credence to the assertion that NTFPs offer diverse products [24]. The NTFPs constitute a critical component of food security; they serve as an important source of income for the poor in many developing countries [25]. Also, it was observed that NTFPs are used as food, animal fodder for livestock, as food condiment [14] and for medicine [26].

Field observation revealed that products from NTFPs were significant in the livelihood of the respondents. Apart from their subsistence utilities, the NTFPs were major sources of income to the rural dwellers. Thus a tripartite mode of utilization was established in this study (Fig-3). While 14% of the respondents claimed exclusive consumption of these products, 7% claimed exclusive use of the products as sources of income while a vast majority of the respondents used the products for both subsistence and economics as sources of income. This finding agreed with a previous report that a large proportion of rural population earn their livelihoods from the collection or extraction and sales of NTFPs thereby improving the quality of life and standard of rural population living near forestlands [27]. Also NTFPs provides livelihood sustenance for people around forest communities [5].

Similarly over the last decade, interest in the use of NTFPs as alternative sources of income has grown tremendously [28]. Three levels of respondents' involvements were observed for NTFPs in the study area. These included collections, processing and marketing. Fig. 4 revealed that these activities were dominated by females. The determination of the income generated by the respondents from the NTFPs revealed that that 33% of the respondents earned below ₦5000 monthly, 36% earned between ₦5000 – ₦10,000 monthly, 13% earned between ₦10,000 – ₦15,000, 7% earn between ₦15,000 – ₦20,000, 4% earned ₦20,000 – ₦25,000 while 7% earned above ₦25,000 per month (Fig-5). Thus, the amount of income generated by considerable proportion of the respondents in this study is low compared to the national minimum wage of ₦ 18,000 per month. This tends to lend credence to the assertion that the scope for poverty alleviation through NTFPs extraction may not necessarily boost incomes, but serve as a safety net for the poor and offer opportunity for employment [29, 30]. The money earned from the NTFPs might be used for household upkeep, feeding, payment of children school fees, clothing etc. The benefit might be useful to alleviate the poverty of the rural people instead of being jobless.

Previous studies revealed that collection and processing of NTFPs provide major employment opportunity to the rural dwellers [17, 31]. For example, in India, about 70% of the NTFPs in the country take

place in her tribal belt and 55% of employment in forestry sector is attributed to NTFPs sector [32] thus NTFPs hold multi-fold impact on economy through downstream processing and trading activities. NTFPs contributed 10-40% of income to the 50 million indigenous households in India [33]. Similarly, in Bangladesh, NTFPs provide employment for nearly 30,000 people [34]. Indeed, about 75% of people in the world depend on NTFPs for their sustenance while about 80% of forest based people in the developing countries use NTFPs daily. However, the monetary value of NTFPs is difficult to estimate because of the informal nature of many NTFPs markets and lack of comprehensive product tracking and inventory [35, 36].

The indigenous vegetables such as *A. viridis*, *T. triangulare* and *S. bialfrae* that were abundant in the study area might be a good source of income for the collectors. *T. danielli*, which is also found to be cultivable in the study area, has its leaves used for wrapping. Nowadays, people preferred food wrapped with leaves to those of synthetic nylon wrapper because of their health benefits. Study has identified plant species whose leaves are used to wrap or package foods [37]. It has been observed that leaves are used for wrapping or packaging of food items and cola nut for sale in the study area [4, 17, 23]. Thus an increasing number of Nigerians earn their living as kolanut producers, transporters, traders, middlemen and even as professionals packing them [38]. The species, *T. danielli*, was reported to contain "thaumatin", a non-caloric sweetener, derived from the aril of the plant, which is 1600 times sweeter than sucrose [39]. *T. danielli* has now been domesticated in most parts of south western Nigeria where it contributes to the economy of rural population [40].

The results obtained in this study revealed that issues involved in NTFPs were dominated by the females. Field observation revealed that the female domination might be attributed to the nature of the work involved in NTFPs. The male were skewed towards the labour-intensive activities like tilling the soil, clearing farm lands, weeding etc. than collecting, processing and marketing NTFPs. This tends to lend credence to the previous assertions that females were more involved in NTFPs than males [20, 41]. Reports indicated that women possessed vast knowledge on NTFPs [42]. Table-3 revealed that though diverse sources abound for NTFPs in the study area; they were mostly sourced from household areas, household farms, free area, and forest. Most of the species that domiciled in the household farms were cultivated while those of the free areas and forest were mostly those growing in the wild. Thus, with little or no cost price, the NTFPs offer considerable financial opportunity to people involved in their gathering and processing.

In conclusion, this study demonstrated the potentials inherent in NTFPs in poverty alleviation in

the study area. They contribute to household and national economies, as well as the provision of employment opportunities to the rural dwellers. However, constraints abound on transportation; storage and spoilage that greatly affect the contributions of NTFPs in the study area. This study revealed that the use of the indigenous knowledge of tribal communities might help in the sustainable conservation of plants that constitute the mother sources of these products. Low input technology could be introduced into the

processing of some of the NTFPs. Government should provide low or no interest loans for rural people to acquire necessary technological equipment for the processing of the products. The provision of all-seasons motorable roads will lower the cost of haulage of the products. Provision of rural electrification will enhance mechanisation of processing and provision of and enhancement of storage. Governmental and non-governmental organizations should offer credit facilities to encourage the youth participation in NTFPs business.

Table-1: Socio- economic status of the respondents in the rural area of south-western zone of Ekiti State, Nigeria

Feature	Description	Proportion (%) of Respondents•			
		A (N= 50)	B(N=50)	C(N=50)	Average
Age	<20	4	11	5	13
	21-60	44	37	43	83
	>60	2	2	2	4
Sex	Male	14	18	15	31
	Female	36	32	35	69
Religion	Christian	23	25	21	47
	Islam	25	21	27	48
	Tradition	2	4	2	5
Education status	Literate	39	40	35	76
	Illiterates	11	10	15	24
Marital status	Single	11	21	15	31
	Married	39	29	35	69

• A= Ogotun- Ekiti ; B = Igbara- Odo Ekiti; C= Ilawe- Ekiti

Table-2: The values of the NTFPs in the selected rural area of south-western zone of Ekiti State, Nigeria

NTFPs category	Species	Family	Common name	Part used
Species used as food	<i>Archachatina marginata</i> (Swainson)	Achatinidae	Giant West African Snail	Fleshy part
	<i>Agaricus bisporous</i> (Lge.) Sing	Agaricaceae	Mushroom	Whole fungus
	<i>Ancistrophyllum opacum</i> (G. Mann& H. Wendl)	Aracaceae	Rattan palm	Apical bud, young shoot
	<i>Tetracpidium conophorum</i> (Mull. Arg.) Hutch & Dalziel.	Euphorbiaceae	Nigerian walnut	Fruits
	<i>Artocarpus cummunis</i> J.R. Forst& G. Forst	Moraceae	Bread fruit	Fruits
	<i>Criceptomys ganbianus</i>	Nesomyidae	Giant rat	Whole part
	<i>Liocarcinus vernalis</i> (Risso)	Portunidae	Grey swimming crab	Whole part
	<i>Chrysophyllum albidum</i> G.Don	Sapotaceae	White star apple	Fruits
	<i>Sciurus niger</i> L.	Sciuridae	Fox squirrel	Whole part
	<i>Testudo graeca</i> L.	Testudinidae	Tortoise	Fleshy part
	<i>Thryonomys swinderianus</i> Temminck	Thryonomyidae	Greater cane rat	Whole part
Soup / soup ingredients/ spices / condiments/	<i>Amaranthus viridis</i> L.	Amaranthaceae	African spinach	Leaf
	<i>Amaranthus cruentus</i> (L.)	Amaranthaceae	Red amaranth	Leaf
	<i>Monodora myristica</i> (Gaertn.) Dunal	Annonaceae	Calabash nutmeg	Fruit, seed
	<i>Xylophia aethiopica</i> (Dunal) A. Rich.	Annonaceae	Ethiopian pepper	Fruit
	<i>Crassocephalum crepidiodes</i> (Benth) S. Moore	Asteraceae	Fire weed	Leaf

	<i>Vernonia amygdalina</i> (Delile)VA	Asteraceae	Bitter leaf	Leaf
	<i>Tetrapleura tetraptera</i> (Schumm& Thonn.) Taub.	Mimosaceae	Aidan fruit	Fruit
	<i>Corchorus olitorius</i> L.	Malvaceae	Jute mallow	Leaf
	<i>Talinum triangulare</i> (Jacq.) Willd.	Portulacaceae	Water leaf	Leaf
	<i>Solanum americanum</i> Mill	Solanaceae	American black nightshade	Leaf
	<i>Solanum macrocarpon</i> L.	Solanaceae	African eggplant	Leaf
	<i>Solanecio biafrae</i> (Oliv.& Hien) C. Jeffrey	Solanaceae	Bologii	Leaf
Species used as medicine	<i>Alstonia boonei</i> De wild	Apocynaceae	Cheese wood, stool wood	Leaf , bark
	<i>Carica papaya</i> L.	Caricaceae	Pawpaw	Fruits Leaves
	<i>Garcinia cola</i> Heckel.	Clusiaceae	Bitter cola	Fruit
	<i>Vernonia amygdalina</i> (Delile)VA	Asteraceae	Bitter leaf	Leaf
	<i>Adenopus breviflorus</i> (Benth.)Roberty	Cucurbitaceae	Wild colocynth	Fruit
	<i>Momordica charantia</i> L.	Cucurbitaceae	Bitter gourd/ bitter melon	Leaf
	<i>Ocimum gratissimum</i> L.	Laminaceae	Clove basil , African basil	Leaf
	<i>Hibiscus sabdariffa</i> L.	Malvaceae	Red sorrel	Leaf, fruit(flower)
	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Neem / nim tree	Bark and Leaf
	<i>Aframomum melegueta</i> K.Schum	Zingiberaceae	Alligator pepper	Fruit, seed
	<i>Bridelia ferruginea</i> Benth	Euphorbiaceae	Ira(Yoruba), Oha(ibo), Kirni (Hausa)	Barks
Species used for wrapping	<i>Thaumatococcus daniellii</i> (Benth .) Benth.	Marantaceae	Sweet prayer plant	Leaf
Species used as oil/ palm	<i>Elaeis guineensis</i> Jacq.	Aracaceae	African palm oil tree	Fruit/ juice
For weaving/ cane	<i>Ancistrophyllum opacum</i> (G. Mann& H. Wendl)	Aracaceae	Rattan palm	Whole Plant
	<i>Elaeis guineensis</i> Jacq.	Aracaceae	African palm oil tree	Palm frond
	<i>Oxytenanthera albyssinica</i> (A. Rich.) Munro	Poaceae	Wine bamboo	Stem
Species used as sweetener	<i>Apis mellifera</i> L.	Apidae	Honey Bee	Honey
Species used for fuel wood	<i>Alstonia boonei</i> De wild	Apocynaceae	Cheese wood, stool wood	Stem, branches
	<i>Irvingia gabonensis</i> (Aubry-Lecomte ex o'Rorke) Baill.	Irvingiaceae	Wild mango	Stem, Branches
	<i>Cola nitida</i> (Vent.) Schott & Endl.	Malvaceae	Kolanut	Branches
	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Neem / nim tree	Stem, branches
	<i>Artocarpus cummunis</i> J.R. Forst& G. Forst	Moraceae	Bread fruit	Branches
	<i>Chrysophyllum albidum</i> G. Don	Sapotaceae	White star apple	Branches

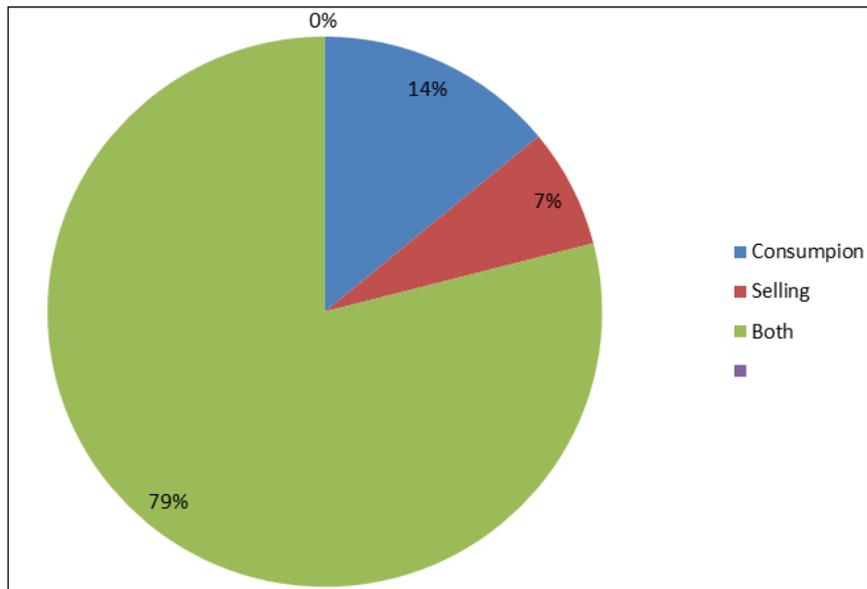


Fig-3: Mode of usage of NTFPs in the study area

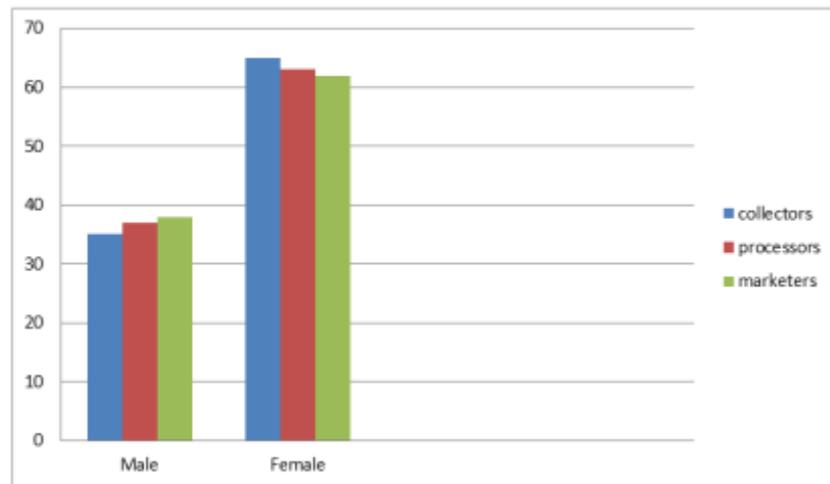


Fig-4: Distribution of respondents involving in NTFPs business

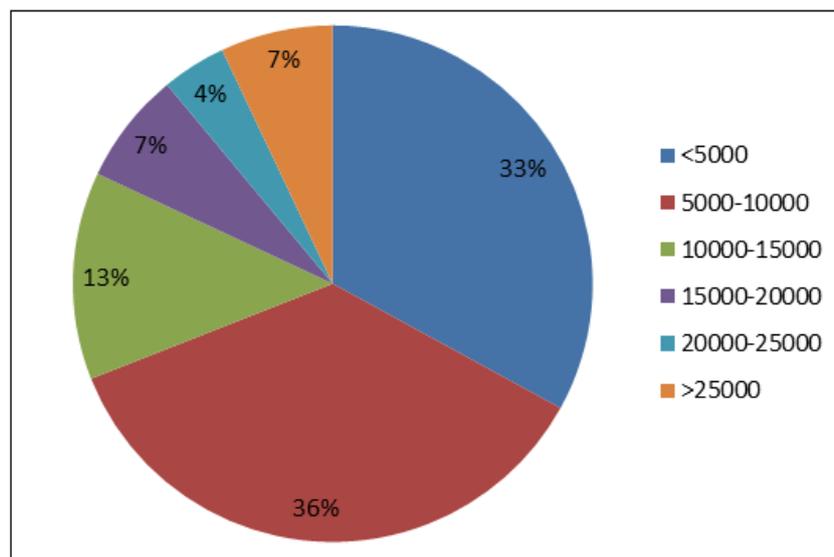


Fig-5: Income generated on NTFPs by the respondents

Table-3: Sources of NTFPs in the rural area of south-western zone of Ekiti State, Nigeria

Source	NTFPs
Household Area	<i>A. marginata</i> , <i>A. bisporous</i> , <i>C. ganbianus</i> , <i>T. triangulare</i> , <i>C. papaya</i> , <i>O. gratissimum</i> , <i>A. indica</i> , <i>E. guineensis</i> , <i>A. indica</i>
Household Farm	<i>A. marginata</i> , <i>A. bisporous</i> , <i>T. conophorum</i> , <i>C. ganbianus</i> , <i>C. albidum</i> , <i>T. swinderianus</i> , <i>A. viridis</i> , <i>C. crepidiodes</i> , <i>V. amygdalina</i> , <i>C. olitorius</i> , <i>T. triangulare</i> , <i>S. americanum</i> , <i>S. macrocarpon</i> , <i>S. biafrae</i> , <i>C. papaya</i> , <i>G. cola</i> , <i>O. gratissimum</i> , <i>H. sabdariffa</i> , <i>A. melegueta</i> , <i>B. ferruginia</i> , <i>E. guineensis</i> , <i>C. nitida</i> .
Common Area	<i>A. marginata</i> , <i>A. bisporous</i> , <i>A. cummunis</i> , <i>C. ganbianus</i> , <i>L. vernalis</i> , <i>C. albidum</i> , <i>S. niger</i> , <i>T. graeca</i> , <i>T. swinderianus</i> , <i>A. viridis</i> , <i>A. cruentus</i> , <i>M. myristica</i> , <i>X. aethiopica</i> , <i>C. crepidiodes</i> , <i>V. amygdalina</i> , <i>T. tetraptera</i> , <i>C. papaya</i> , <i>A. breviflorus</i> , <i>M. charantia</i> , <i>O. gratissimum</i> , <i>A. indica</i> , <i>B. ferruginia</i> , <i>E. guineensis</i> , <i>O. albyssinica</i> , <i>A. cummunis</i>
Forest	<i>A. marginata</i> , <i>A. bisporous</i> , <i>A. opacum</i> , <i>A. cummunis</i> , <i>C. ganbianus</i> , <i>L. vernalis</i> , <i>S. niger</i> , <i>T. graeca</i> , <i>T. swinderianus</i> , <i>A. cruentus</i> , <i>M. myristica</i> , <i>X. aethiopica</i> , <i>T. tetraptera</i> , <i>A. boonei</i> , <i>T. daniellii</i> , <i>A. opacum</i> , <i>O. albyssinica</i> , <i>A. mellifera</i> , <i>I. gabonensis</i> , <i>A. cummunis</i>

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