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Conservation and socio-economic valuation of *Raphia hookeri* in Ekiti State, Nigeria

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ABSTRACT: Five rural communities were selected from each of the three existing geopolitical zones of Ekiti State, Nigeria. In each community, five palm wine tapers (i.e. Producers), five palm wine sellers (i.e. Retailers), ten palm wine drinkers (i.e. Consumers), five landowners and groups of residents were interviewed with the aid of semi-structured matrix to identifying the socio-economic benefits derivable from *Raphia*, its cultivation constraints and also define villagers' indigenous knowledge about the species. Data were obtained from the respondents on the frequency and number of *Raphia* taped per day, volume of palm wine produced and volume offer for sale, palm wine consumption pattern, *Raphia* cultivation and tenure regime relating to *Raphia* trees. The respondents were observed to be of diverse socio-economic classes and the socio-economic features were not considered as pre-requisites to the respondents' consciousness about palm wine in the study area. Over 60% of the producers tapped between 5 and 10 *Raphia* trees in a day with over 90% of the tapers tapping twice in a day with the peak period for palm wine production being the dry season. Quite often, some of the trees tapped were located on other people's land and the landlords were usually given a proportion of the wine as royalty. 49% of the wine producers tapped between 50 and 150litres of palm wine daily and a tree is tapped for an average of 24 days. 65% of the wine producers offered between 25 and 75% of the palm wine produced for sale from which an average daily income of 250 Naira is derived. The average volume of palm wine sold by most of the retailers varied from 50 to 100litres and average daily incomes of between 250 and 750 Naira are derived. These incomes are greater than the Nigerian minimum daily wage of 166 Naira. Most consumers consumed between 2 and 5litres of palm wine in a day with most of them consuming palm wine more than two times daily. The myriad problems hindering palm wine production and *Raphia hookeri* cultivation were identified. Ecological strategies that could enhance *Raphia* cultivation in the study area were prescribed.

Key Words: Socio-economic, Conservation, *Raphia hookeri*,

Introduction

Ekiti State is perhaps the only homogenous state in the federation of Nigeria in terms of its indigenous composition. The state is composed purely of the Ekitis who shared same culture and phylogeny. Over 75% of its 1.6 millions inhabitants (EKSG 1997) are involved in farming activities (Kayode 1999) and are mostly rural dwellers.

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Ekiti State, with a contiguous landmass of about 7000sq. Kilometers, is situated between latitude 7⁰25' and 8⁰20'N and longitude 5⁰00' and 6⁰00' (Kayode 2002a). Two climatic seasons prevailed in the state, a raining season from March to October and a dry season from November to February. Annual rainfall is about 1150mm (Kayode and Faluyi 1994), pH 6.6, organic matter 6.6% and moisture holding capacity 64.7% (Kayode and Akande, 1998). The soil in the state has also been described as overlying metamorphic rocks of basement complex, which show variation in size and mineral composition (Smith and Montgomery 1962).

Raphia hookeri constitutes the major source of palm wine, an important non-woody forest product in Ekiti State. *R. hookeri* is a member of the family Arecaceae (Palmae) (Brink 2002). It is widely known as *Raphia* palm and Wine palm. It is widely found in the forest zone of West Africa, India peninsular, Malaysia and Singapore. *R. hookeri*, a monoecious tree whose trunk may grow up to 10m tall and 30cm in diameter, is occasionally cultivated in Nigeria.

Palm wine is the culturally acceptable wine of the ancestors in Ekiti State of Nigeria hence it is widely utilized for all socio-cultural activities in the state. The recent hike in money economy in Nigeria had however led to overexploitation of the non-woody forest products as viable source of income most especially during the off-farm season in the rural areas. Presently a gross dearth of studies on the production and consumption of palm wine abounds in Nigeria. Study reported so far was that of Okafor (1979). Elsewhere in West Africa sub region, Moby-Etia (1982) had equally reported on palm wine production and marketing in Duala region of Cameroon. The study being reported here evaluates the economic potentials of palm wine in the study area and examined the potentials of conserving *Raphia hookeri*, the tree species that constitutes the major source of palm wine in the state.

Materials and Methods

Five rural communities were selected from each of the three existing geopolitical zones of the state. The zones are Ekiti North (A), Ekiti South (B) and Ekiti Central (C). In each village, the following categories of respondents were randomly selected and interviewed. They were:

- (i) 5 palm wine tapers (i.e. Producers)
- (ii) 5 palm wine sellers (i.e. Retailers)
- (iii) 10 palm wine drinkers (i.e. Consumers) and
- (iv) 5 land owners.

The interviews were conducted with the aid of semi-structured matrix, which were directly administered by the researcher (after Kayode 1996, 1997, 2002b and 2003). The interviews were focused, conversational and two-way in nature. Information derived from the respondents include the frequency and number of *Raphia* taped per day, volume of palm wine produced and volume offer for sale, palm wine consumption pattern, *Raphia* cultivation and tenure regime relating to *Raphia* trees.

In-depth group interviews were also conducted in each village to encourage co-operative approaches to identifying the socio-economic benefits derivable from *Raphia* and its cultivation constraints through group consensus and also define villagers' indigenous knowledge about the species. Five groups, each of which consisted of five individuals were interviewed in each village.

Key informants, who consisted of Revenue and Agricultural Extension Officials, Teachers, Community Leaders as well as Community Development Officers, were interviewed to provide supplementary information on *Raphia* utilization and cultivation in the study area.

Results and Discussion

The socio-economic classification of the respondents in this study is shown in Table 1. Respondents cut across all the socio-economic strata. Thus, palm wine is a widely accepted non-woody forest product in the

study area. The fact that the respondents were of varied socio-economic class, indicated that the socio-economic features were not considered as pre-requisites to the respondents' consciousness about palm wine in the study area. Table 1 shows that all the producers were male (69%, Table 1), mostly illiterates (71%, Table 1) of usually 20 to 60 years of age (67%, Table 1), and were of low to medium economic status (84%, Table 1). Though, the index of wealth varied from one community to another but common indicators, which were respondents' possessions and savings, were used in the classification into the various economic strata.

Table 1. Socio-economic classification of the respondents in Ekiti State.

Feature	Description	% of Respondents*			
		Producers	Retailers	Consumers	Average Total
Sex	Male	100	36	72	69
	Female	0	64	28	31
Literacy	Illiterate	82	66	65	71
	Literate	18	34	35	29
Age (Yrs.)	<20	0	0	18	6
	20-60	52	96	52	67
	>60	48	4	30	27
Economic	Low	46	20	54	40
	Medium	34	62	36	44
	High	20	18	10	16

* Percentages were calculated to the nearest whole numbers

The frequency at which the producers tapped *Raphia* trees in the study area is shown in Table 2. Most of the producers (over 60%, Table 2) tapped between 5 and 10 *Raphia* trees in a day with over 90% of the tapers tapping twice in a day. Tapping is usually done early in the morning and sometimes late in the afternoon. Field observation during the study revealed that the peak period for palm wine production is the dry season. This correlates with the previous observation of Moby – Etia (1982) in Duala region of Cameroon. During the dry season, there is considerable reduction in the amount of income derivable from the farms. Thus, palm wine production constitutes a reliable source of income to the farmers during this off – farm season.

Quite often, some of the trees tapped are located on other people's land where the landlords are usually given a proportion of the wine as royalty (Table 2). Almost half of the wine producers (49%, Table 2) tapped between 50 and 150litres of palm wine daily and a tree is tapped for an average of 24 days. 45% of the wine producers tapped less than 50litres of palm wine daily (Table 2). Most of these amounts were offered for sale. Table 2 also revealed that 65% of the wine producers offered between 25 and 75% of the palm wine produced for sale from which they derived an average daily income of 250 Naira (Table 3).

The female dominated retailing in palm wine; most of them were illiterates whose age ranged from 20 to 60years and were mostly of medium economic status (Table 1). The average volume of palm wine sold by most of the retailers varied from 50 to 100litres and most of these retailers made an average daily income of between 250 and 750 Naira (Table 3). Thus palm wine apart from being a source of refreshments to the consumers, is also a veritable source of income and employment. Previous assertion by Rao (1999) had revealed that the non-woody forest products are potential source of income and local employment opportunities. In palm wine distribution chain, people employed apart from the producers (i.e. the tapers) and the retailers, also include people involved in the haulage of the wine from the farms to the points of sale. The palm wine producers and the retailers generated considerable amounts of income. In the study area, the minimum daily wage, as at the time of this study, was 166 Naira which falls below the average income generated by the palm wine producers and the retailers (Table 3). Results from this study lend credence to the previous assertion of Okafor (1979) that more income is earned from palm wine tapping than the Nigerian minimum daily wage.

Table 2. Frequency and location of *Raphia* tapped, volumes of palm wine produced and sold by tapers in Ekiti State, Nigeria .

Description	Respondents / Zone			Average Total
	A	B	C	
(a) Number of <i>Raphia</i> trees tapped per day+*				
< 5 trees	32 (88)	28 (93)	28 (100)	29 (94)
5-10 trees	68 (96)	72 (97)	64 (94)	68 (96)
>10 trees	0 (0)	0 (0)	2 (50)	1 (17)
(b) Location of <i>Rahia</i> tree tapped				
Tapped <i>Raphia</i> in own land only (%)	8	12	4	8
Tapped <i>Raphia</i> in own land and in other people's land (%)	24	28	36	29
Tapped <i>Raphia</i> in other people's land only (%)	68	60	60	63
(c) Royalties paid by palm wine producers to landlords**				
Pay an agreed amount of money/tree (%)	8	4	8	7
Pay in kind by given landlords an agreed proportion of palm wine tapped (%)	92	96	92	93
(d) Volume of palm wine produced by palm wine producers**				
<50 Litres	40	44	52	45
50-150 Litres	48	56	44	49
>150 Litres	12	0	4	5
(e) Proportion (%) of palm wine produced offer for sale**				
<25 Litres	16	40	32	29
25-75 Litres	80	52	64	65
>75 Litres	12	0	4	5

+ Figures in brackets are the proportion of producers that tapped twice per day

* Percentages were calculated to the nearest whole numbers

** Percentages were calculated to the nearest whole numbers

Table 3. Income derivable by palm wine producers and retailers in Ekiti State, Nigeria.

Description	Proportion (%) of Respondents / Zone*			Average Total
	A	B	C	
(a) Income derivable by palm wine producers and retailers				
<250 Naira	76	80	68	75
250-750 Naira	20	20	32	24
>750 Naira	4	0	0	1
(b) Volume of palm wine sold by respondents' retailers				
<50 Litres	20	32	16	23
50-150 Litres	76	64	84	75
>150 Litres	4	4	0	3
(c) Income derivable by respondents' retailers				
<250 Naira	24	16	20	20
250-750 Naira	68	72	72	69
>750 Naira	8	12	8	9
(d) Volume of palm wine consumed by respondents' drinkers				
<2 Litres	26	33	28	29
2-5 Litres	64	62	68	65
>5 Litres	10	4	4	6
(e) Frequency of palm wine consumption among respondents' drinkers				
Once	12	18	4	11
Twice	28	30	26	28
More than twice	60	52	70	61

+ Exchange rate is not stable in Nigeria. During the study 1 US Dollar = 150 Naira.

* Percentages were calculated to the nearest whole numbers

The consumers were mostly male, illiterates, aged between 20 and 60years, and are of varied economic status (Table 1). Most of them consumed between 2 and 5litres of palm wine in a day with most of them consuming palm wine more than two times daily (Table 3). Table 4 describes the conservation status of *Raphia hookeri* in the study area. A very few proportion of the respondents had been involved in the cultivation of this tree. Cultivation was limited to the transplanting of *Raphia hookeri* wildlings. Thus, production of new *Raphia hookeri* trees is low in the study area. Production of new trees is equally limited by land availability hence willingness to plant and/or transplant *Raphia hookeri* was skewed towards the land owners and the palm wine producers who viewed *Raphia hookeri* as a substantial source of income and employment. Unfortunately, many of the landowners lacked the requisite silvicultural knowledge about this tree species. Most of the palm wine producers who claimed to have such knowledge have their knowledge limited to their ability to recognize *Raphia hookeri* that are ripe for tapping which is usually the appearance of the first small leaf subtending the inflorescence. Most of the tapers were above 45years in age (Table 1) with only relatively few involved in the training of more tapers (Table 4). Even among the new tapers produced none of them is below 20years old. Thus, with relatively low rate of producing new *Raphia hookeri* trees, a gross dearth of investment in its cultivation abounds in the study area hence the species is being endangered. Also the act of climbing the tree, cutting the inflorescence (i.e. flower spathe), and collecting the sap in calabash containers which are emptied once or twice daily is the method employed in the study area. This method requires some expertise that many local residents lacked and are not being passed to the younger generation hence the indigenous tapping technique is being endangered.

Table 4. Conservation status of *Raphia hookeri* in Ekiti State, Nigeria

Description	Proportion (%) of Respondent*			
	Producers	Retailers	Consumers	Land Owners
Respondents who had:				
1. planted <i>R. hookeri</i> before the study	3	1	0	3
2. have transplanted <i>R. hookeri</i> seedlings before the study	7	4	0	68
3. who are willing to plant <i>R. hookeri</i> after the study	83	8	5	88
4. who are willing to transplant <i>R. hookeri</i> seedlings after the study	83	8	5	90
5. have land for planting <i>R. hookeri</i>	8	4	2	92
6. have enough silvicultural knowledge about <i>R. hookeri</i>	91	16	8	12
7. know how to tap palm wine from <i>R. hookeri</i>	100	0	9	10
8. who have train more palm wine tapers	12	0	0	0

* Percentages were calculated to the nearest whole numbers

The bulk of palm wine produced is presently limited to *Raphia* growing in the wild, most of which are located in relatively far distances from the points of sale, hence the cost of transporting the wine are often prohibitive. Consequently, there is an urgent need for the prescription of ecological strategies that could

enhance *Raphia* cultivation and subsequently palm wine production. To achieve these objectives, some of the *Raphia hookeri* trees present in the study area should be left untapped. Tapping for wine usually damages the developing inflorescence thus making flowering impossible and rejuvenation naturally by seeds unattainable. *Raphia hookeri* trees have monocarpic stem thus the species flower and fruit only once and die. Efforts should be made to encourage the transplanting of *Raphia hookeri*'s wildlings. An improved method of tapping wine from *Raphia hookeri* trees should be evolved with the aim of making tapping attractive to the youths. Palm wine tapping may provide the youth with viable employment opportunity.

Research efforts aimed at increasing the shelf life of palm wine should also be intensified. This could boost palm wine productivity and enhance the economic returns from the sale of palm wine. Previous report by FAO (1990) had identified the extremely variable amount of sap yields and the short life span of the wine as the major problems associated with palm wine production and marketing. The state government should endeavour to establish palm wine-bottling companies. These will generate income to the coffers of the state, provide employment opportunities and encourage *Raphia* cultivation.

There is also the need for public enlightenment on the impending disappearance of this tree in the study area. Rural dwellers should be encouraged to utilize the economic potential offered by palm wine production and marketing as such could discourage rural-urban migration. The use of palm wine in all socio-cultural engagements in the study area constitute an enabling economic environment for investment in palm wine production. Laws aimed at discouraging the indiscriminate felling of *Raphia* trees should be promulgated. Also, government should intensify more efforts in the construction of rural roads and the renovation of the existing ones such that the roads would be motorable. This would reduce the present fares being charged on transportation of palm wine from the farms to the point of sales. Research institutes, such as the Nigeria Institute for Oil Palm Research, Benin City, Nigeria, should be well funded and saddled with the responsibility of researching into the development of improved varieties of *Raphia hookeri*.

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