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The Value of Palm Wine Tapping in the Food Production Practices of Igbo-Land: A Case Study of Idemili South Local Government Area, Anambra State

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Abstract
Indigenous technology such as tapping of palm wine has proved to be an efficient and effective means of food processing in the tropical world, Particularly in South Eastern Nigeria. Oil palm (*Elaesis guineesis*) and Raphia palms (*Raphia hookeri* and *Raphia vinifera*) are the most useful palms in the Eastern Nigeria. Using ethnographic research method, the paper examined the socio-cultural, religious, health and economic value of these palms in the southeastern part of the country and asserted that pasteurization of palm wine or its sap without the addition of sodium metabisulphite or any other preservative could preserve the product without the loss of any vital constituents of the palm wine/sap. The paper also buttressed that palms are traditionally tapped for their sap. The author of this work is of opinion that with the cordial relationship existing between traditional food processors and food scientists/technologists in the case of well-preserved palm wine, income would thrive much more, comparable to what it is now. Based on the findings, the study recommend partnership of food scientists and traditional food processors for effective preservation of the product with resultant huge income generation.
Keywords: Palm Wine, Tapping, Traditional, income

INTRODUCTION

The restricted area of study is Idemili South Local Government Area, an Igbo speaking zone. The area is made of Ojoto, Uke, Udani, Nnobi, Nnokwa, Awka Etiti, Alor and Oraukwu. It lies between, latitude $6^{0}14^{I}$ and $6^{0}15^{w}$ and $6^{0}\,4^{IE}$ and $7^{0}\,0^{IE}$. Basden (1938) observed "the area to be located in the South Eastern area of Nigeria, about 15km from Onitsha". It is also bounded by Idemili North L.G.A. to the North; to the East by Aguata, L.G.A; to the West by Onitsha L.G.A. and to the south by Nnewi, L.G.A. The population density according to 2006 census is 207683/km^2. It is found within the savannah climatic region and has both dry and wet seasons. The temperature is suitable for the growing of tree crops and hence encourages the tapping and processing of palm wine. Oral tradition conducted within the area has proven human antiquity and exploitation on the environment. The process of constant bush clearing, bush burning and deforestation, due to huge building, construction and food production activities have resulted to derived savannah in Igboland. Therefore, this paper aimed to document an aspect of Igbo past and contemporary cultural behaviour using palm wine tapping as a case study. It is an integral means of food production in Igboland, Idemili South inclusive. It is worthy to note that palm wine tapping is an aspect of the food plants which the varieties account for forty-five percent of the dietary and liquor habit. It also account for forty-seven percent of the total revenue of the people. Palm wine from oil palm trees (*Elaeis guineensis*) and raffia palm (*Raphia hookeri* and *Raphia vinifera*) are domesticated for not only for revenue, but also for some other ends like medicinal, alcohol, sugar etc.

Method of Research

This study used ethnographic research method and documented test. Ethnographic is the study of ethnic groups – value, norms, economic, socio-cultural life and so on. Based on oral interview and observation, the study focused on the traditional means of tapping palm wine. The writer observed and recorded also the local tools used in tapping. A keg of palm wine was bought from Ideani (a town in the study area), pasteurized one third to a boiling point, following the advice of a food scientist without addition of sodium metabisulphite. The boiled fresh palm wine was allowed to cool and kept at the refrigerator with constant power supply for two weeks.

Literature review: food production

The obvious increase of scientific information becomes difficult to locate all the existing literature relevant to food production. There are different perceptive to the interpretation of food production by different scholars. Some ascertain it to be indigenous while others believe it is diffused. In any case, their arguments are not in isolation, since all of them collectively help to give a unified explanation of the origin and technique of food production.

According to Chester (1969) in his book "Man in Prehistory" he notes that the beginning of food

production was initially localized in certain areas because only certain environments are suitable for farming and requires the development of special technique. Therefore, it became impossible for farming to spread from outside this part of the world beccase some regions are of dense forests zones, cold land and so on. Gledhill (1972) in his book "West African Trees" mentions that, the economic importance of trees lies in the value of the timber and other products which they supply such as the timbers used in the erection of buildings. .Other economic trees are useful in many purposes such as fruits, wine, oils, customary and commercial medicines and drugs. Still on the localization of the origin of food production, Harris and Hilman (1989) listed some of those earliest tree crops that are indigenous/ localized to the tropical rain forest zone. They are palm trees (*Elaesis guineensis*) Raffia palm (Raphia hookeri, vinifera and sponian mombin), African bread fruit (Treeculia Africana) and native pear "Ube" (Dacroyodes edulis) etc. They further maintained these trees to be the earliest economic trees to be domesticated in the tropical rain forest zone of West Africa, in which Igbo land especially Idemili South, falls. The observation of Harris and Hilman is highly supported because the process of experimentation by the people concerned started with their being harvested from wild species. Later, protective sanctions were given over them for safeguarding them.

Nevertheless, the migration of the Bantu is used to diversify food production in Igboland as being diffused. Oliver and Fage (1974) from a linguistic point of view asserted that "the knowledge of domestication of economic trees was associated with the so called 'Bantu migration." Their migration began somewhere in Nigeria perhaps close to the present Igboland in Imo and Anambra State or between Nigeria and Cameroon. It was believed that during the process of the Proto-Bantu people migration, they crossed the river valleys at the equatorial forest via south and northward. Therefore, it is very likely that these people acquired some rudimentary agriculture based on the oil palm, palm tapping and Africa yam, beans etc. Despite the Bantu hypothesis, some archaeologists still believed that the native pear cultivation is used to pre-date the period of the Bantu migration. For example, Maurell (1964) notes that despite the belief on the Bantu origin there are economic trees that are of African origin and not diffused. Examples are oil palm tree, Iroko, bread fruit etc. His hypothesis centres on the fact that, certain trees only survive or grow in regions that are favourable to their adaptation. Hence, oil palm, Iroko and breadfruit only survive in the tropical rain forest and not in temperate or humid climatic regions. Since those mentioned trees can only survive in the tropical climatic zones, one can now reasonably argue that they are the earliest cultivated trees in Igboland, Idemili South since the Igbo region of the West Coast of Africa belongs or falls within the tropical rain forest of Africa.

In the case of palm wine tapping, palms are believed to be among the oldest flowing plant in the world (Redhead, 1989). In tropical Africa, the Igbo region, the sap used to obtain palm wine is mostly taken from oil palm trees (Elaeis guineensis) and raffia palm (Raphia hookesi and Raphia vinifera). Such wine has been known to the people of Igboland as *Ngwo*, *Nkwuelu* (up wine) and *Olo* (down wine) in parts of Idemili L.G.A. Anambra State, all from Raphia palm. The wine is regarded as a refreshing beverage and as a drink to be used in traditional rites (marriage, kingship, title taking, naming ceremony, etc). Ayernor and Matthew (1971) reported early navigators of the 15th century in Guinea Coast to trade on palm wines. In Nigeria they further ascertain palm sap to be from two genera."Elaesis guineensis" and "Raphia hookeri/vinfera". Dalibard (1999) reported edible palm sap to be more profitable than allowing the palm to produce fruits. He made this observation based on its sugar content after chemical reaction and extraction of both ethanol and alcohol which could be 5-8 times higher than its fruits formation. Abedin et al (1987) ascertain that palm trees produces sap between 10-15 years.

Traditional Method of Tapping both Oil Palm Tree and Raphia Palm

There are several species of both oil palm and Raphia palm in Igboland, all are capable of producing wine Tuley (1965:120) has observed Raphia hookeri wine to be used mainly among in Igboland. The methods of tapping on both palms in the study area are two types:

i. Non-destructive (live palms) method is practiced between September and March yearly.
ii. Destructive method {felled trees} is practiced between April and August yearly. Both methods aim at generating wine.

The first method involves cutting off all fronds below an unopened male inflorescence. The second method involves palm trees felling cutting the root of young trees as well as the trunk of older trees to the ground. The felled tree method is very popular in the case area although those towns that lived in close proximity to the stream like Oraukwu, Ideani, Uke practice both methods more especially with raphia hookeri and vingera. The raphia wine is called *Ngwo* while oil palm wine is called *Nkwu- elu*, *Olo* and *magbwaji*. To buttress this method, Tuley (1965:28) itemized three different methods of tapping oil palm.

1 Felling, 2: Stem tapping, 3: inflorescence tapping.

Felling: This is the process by which "Down wine" is generated. It is made possible after felling the palm tree and the terminal bud cut, hence a large quantity of sap is produced. This method aids in environmental hazard, as it eliminates the palm population. Tuley (1965) considered the method and its product poor. **Stem tapping** generates "Up wine" through the process of cutting the stem behind the apical growing point. A large

amount of sap is produced. This method can eliminate the palm either by bad positioning of the cut or by over tapping, hence caution is needed. **Inflorescence tapping**. This is the most wildly accepted method. Oral tradition reveals this method as most cherishable and the wine produced is considered very superior. Thus it commands a higher price. Inflorescence tapping is done by tapping an axillary's male buds without any damage to the central growing point. Although this method reduces the supply of fruit, it provides much needed income to the benefactor.

Tools for Tapping both Palms

a. **Palm Tree**: Oral Traditions listed the following.

i. A cutlass for pruning the fronds and general cleaning of the taping area.

ii. A tapping knife or kitchen knife for making a rectangular opening at the male inflorescence

iii. A climbing rope, *Agbu,* for climbing the very tall trees. It is made from the stem of the ladder palm, padded to lessen abrasion on the tree trunk. The rope supplies strength as the tappers hang by a thread. The rope is made by joining the fisherman's knot which locks when pressure is applied (Tuley, 1965). Climbing is made easy by bracing against the trunk of the palm while encircling rope is jerked upwards by alternately leaning backwards and forwards. Oral Traditions also mentioned a double system employed using rope by the tappers. This double system is made possible by placing the rope about the shoulders and around the thigh. Tuley (1965) observed this double system to be very slow, hence "cissy" by most tappers, affiliated to raphia –wine drinking area.

iv. Ladder: most beginners use ladders but wouldn't give enough courage and strength. It is tiresome as one moves the ladder from one palm to the other.

v. A bottle or gouge/calabash – used to collect wine from the male inflorescence.

B. **Raphia Palm.** Oral tradition itemized thus:

i. The cutlass used for trimming the leaves and general clearing of the panel area.

ii. The tapping chisels for cutting the panel and also as a mallet for inserting the pegs

iii. Ladder for tapping the debris on the trunk. Two types of ladder (a) one made from long two bamboos with cross sticks for the steps while the other bamboo is called true bamboo "Bambusa spp" is nicknamed Indian Bamboo. It is made by trimming and leaving the side-branch bases as steps.

iv. The pot – a spherical and robust clay pot or a gallon of jar hung with rope to avoid slipping.

v. The covers – used to cover the pots against rain and insects. The covers are made from bundled leaflets of the palm

vi. The funnel – made of folded leaves of different marantaceae or marantochloa spp commonly found in swampy zones. It is formed by two small pegs made from the thorny spikes on the stem of the common tree known as Diospyros mon buttensis {Tuley 1965}.

vii. The fire bundle – This is made from the dried pod-case of the oil bean pentaclethra macrophylla. The length of the pod can be cut according to choice, preferable in 0. 1016 metre – 0.127 metre, and them split longitudinally into strips. These finally are tied into a cylindrical bundle.

viii. The tapping platform: The tapping platform must be prepared before tapping commences. This is done to enable the tappers to have comfortable stance and the free use of both hands. The bulk of the leaves at the top of the palm are pruned away with a cutlass leaving long lengths of the stout mid-ribs. The height of the tappers determines the tapping panel which must be wedged horizontally by a thick stick between the trunk and two leaf mid-ribs. After this, the platform is put immediately opposite the point of emergence of the first inflorescence leaf. Finally, a rope is then placed across two leaf bases, so that the tapper may stand on the cross-stick and brace backwards with the rope in the small of the back, or across the buttocks. In line with the tools of tapping Raphia wine, Tuley (1965:127) listed some procedure of opening the tapping panel thus:

a) Prune away the tops of the inflorescence leaves with the cutlass.

b) With the cutlass cut through the trunk and leaf bases just below the point of the emergence of the first inflorescence leaf.

c) With the cutlass and the chisel cut a slit in the first inflorescence leaf base approximately 9 inches long and 2in-3in wide. (This is exactly opposite the point of emergence of the first inflorescence leaf.)

d) Carefully, with the chisel, remove all tissue within the circumference of the first inflorescence leaf base. The leaf base acts as a cylindrical casing and the slit enables the passage of the wine and further cutting of the tapping panel.

e) Ignite the fire-bundle which should smoulder gently inside the tapping panel

f) Each day enlarge the slit downwards removing a further thin slice of tissue inside the casing and replace the fire-bundle continue until the wine commences to flow.
g) When flow commences, place the funnel in position;
h} Wedge a short length of stout stick between one of the upper bamboos and the trunk, in such a position that the pot can be hung from it with the heck just below the panel and allowing easy access to the funnel.
i) Place the side covers in position by nailing them on either side of the panel, using the chisel handle as a mallet.
j) Place the top cover in position by forcing the top into the aperture of the panel.
k) Insert a wad of leaves into the top of the panel to completely seal the panel and the pot.
l) Finally pass tie-tie around the pot and the trunk to hold both the pot and the trunk to hold both the pot and the covers firmly in position.
m) Empty the pot daily and remove a thin slice of tissue from the panel before replacing the pot.
n) When the flow begins to decline, it can be stimulated by reapplying the fire bundle.

Socio Cultural, Economic and Religious Value of Palm Wine Tapping

The palm sap/wine is the major product of both oil palm and Raphia palm. Both are one of the major occupational engagements of the rural dwellers in Nigeria (Obahiagbon 2009). The following three sub headings would be centred on the value of this traditional technology.

Socio-Cultural and Religious Values: Palm wine plays an important role in many ceremonies; namely, wedding, birth celebration and funeral wakes. During these rites, generous quantities are served. Palm wine is also found in the bars and clubs in big cities in Nigeria as well as in local stores in the villages. It is accompanied by musical performance. Most drinkers are being affected with its alcoholic contents thus singing erotic songs. Although drunker under ecstasy especially for women speak arrogantly, laugh wildly and behave wild. Men, who drank to stupor, can easily reveal secrets. In Ghana, Bergert (2000) reported natural yeast, which accumulated at the bottom of the collection pots, was to be used for baking *abolo* – a type of steamed bread in the Ewe community's diet. He further said that the natural yeast has been replaced by imported bread yeasts.

The case area (Idemili people) consumed the wine raw or distilled it to achieve *kaikai*. The Yoruba call it *Ogogoolo* .*The g*eneral nickname is John White and pidginize as Sapele water. The Europeans know the wine as whiskey; Ghana calls it *Akpeteshi* and Togo calls *sodallo* (Bergert 2000 and wikipedia encyclopedia). The Kaikai literally means local dry gin and aids in the preservation of dead bodies and dried fruits: The dead bodies are preserves in the study area with the kaikai for up to 3 to 4 days before burial. It is commonly done where mortuaries are not near and the cost is exorbitant. Many Americans use the kaikai for soaking fruit to bake Christmas cakes. Items such as currants, apple, dates and plums are soaked between 3 to 4 months in a bowl with the kaikai before baking. It made the Christmas period intoxifying.

Culturally, it is a symbol of power in Ewe communities in Ghana. Aryeampong (1996) observer that the social status confers only to the elders who were allowed to drink palm wine. Their privilege was accorded in the past. The present youths, due to urbanization, industrialization and marketing through the influence of western life, now drink palm wine. The changing role brought a high demand of both palm wine and distilled wine in Ghana and Nigeria. In Nigeria, especially the high demand had led to the illicit distillation of *kaika*i. This has affected the production of palm oil; hence most oil palms are never allowed to bear fruits.

Health wise, palm wines are medicinal, serving as eye cleansers because of its yeast content. Distilled wine (local dry gin or kaikai) is used for both internal and external replenish. Internally, it is used to mix local herbs for different therapy such as low sperm count, stomach upset, Gonorrhea etc while externally, it is used to clean bone fracture and other sour injury.

Religiously, palm wine is used for libations. The liquor is poured by religious traditionists to the gods during some festivities. Also it is used as an item of prayer after childbearing, naming ceremonies, burial and funeral celebrations.

Economically, it serves as a source of wealth to the owners in the study area. Apart from huge sales because of its yeast content, it generates income due to its brewing for local dry gin. It also generates income through its usage in the baking of bread. Again the sap is very rich in sugar about 10 to 20%, according to species, individual variation and management {Dalibard 1999). It contributes to the daily life of the communities. For instance, it is used to accomplish the payment of dowry and traditional marriage. In so doing, it helps to increase their source of income. This is in line with the people of Bangledesh, in North Sulawesi tribe where the dowry is still payable in the form of the number of sugar, palms, indicating the great economic value placed on the palm trees (Dalbard 1999). In Idemili South, an aspect of Igbo area, kegs of palm wine till tomorrow determine the successfulness of traditional marriage. This is an attribute to the strength and dignity of the tappers.

Recently, the society developed a large scale interest in palm wine. The interest centres on the solution of environmental degradation based on the alternative source of fossil fuel and fertilizer. These made the commercial interest initiate a new look at the fuel alcohol and sugar potential of palms (Hamiton and Murphy 1988).

Pasteurized palm wine: It's Demonstration

A key of palm wine was bought and divided into three. One third was boiled at a boiling point, allowed to cool down and stored inside the refrigerator. The other was left as it was at the room temperature and the last was kept at the refrigerator all for five days. Those inside the refrigerators were with constant power supply. The result is labelled **A, B, C**. **A** is Pasteurized Palm wine (Boiled), **B** is Fresh Palm wine inside the Refrigerator and **C** is Fresh Palm Wine at Room Temperature.

Result: A and B when out of power supply, that is, out of refrigerator test fresh as soon as were out. Soon after they were kept to defrost about four hours on top a table, A still retained its freshness while B lost its freshness and test sour. The case of C became a different story. It lost freshness even before reaching the experimental five days.

Finally, from the demonstration, it was observed that the test of palm wine still retained freshness after many days due to the activities of pasteurization, this was without addition of Sodium Metabisulphate. Therefore addition of Sodium Metabisulphate would aid palm wine lasting longer than five days probably, when it is canned like other juice found in the market.

Suggestion

Pasteurization of Palm wine with or without sodium metabisulphite is what Nigerians need to strengthening the local traditional industry and uplifting our tourism industry. I suggests that the tappers should be educated on how to pasteurize their Palm wine in other to incur more revenue. Also refrigerators should be mortgaged to them and constant power supply available. Other Sole perpetrators on palm wine should also learn how to pasteurize their goods. These help to eliminate poverty and encouraged small scale industry in the study area and beyond. Eapen (1972) suggested the use of sodium metabisulphite along side pasteurization at 70% for 40 minuitis for the period of 12 months only. While Obahiagbon and Oviasogie (2007) extended pasteurizing at 75^{0C} for 45 min for 24 months of packaging palm wine with any chemical preservative. According to the authors, pasteurization of palm wine for either for 12 months or 24 months does not affect the sap nutrients, and never deteriorates the content. Pasteurization has helped to eliminate the health hazards of preservatives in food. For example, the sodium metabisulphite which is carcinogenic had been recommended for use in palm wine preservation for decades (Obahiagbon 2009). Since pasteurizing with sodium metabisulphite is used in many countries (Ghana, India etc) in packaging palm wine, Nigeria food scientists could borrow a leaf and help to re-brand this country. Palm wine packaging should be serving as an aid in the re-branding. The mission, when achieved should be an avenue in strengthening the tourism industry. Tourists, who always seek for innovation and culture outside their own, would be ready to restore to the invention. The watchword is centered on the packaging. They should make it palatable.

Conclusion

The present value for oil palm "elaesis guineesis" and raphia palm, "raphia hookeri or raphia vinfera" is about ₦100 or ₦150 per glass of cup. Two small short glass cups of *kaikai* (local dry gin) are ₦5.00 or ₦10.00. Therefore the Pasteurization of Palm wine into packaging in a palatable standard similar to either lucozade boost or canned juice drinks could be acceptable by Nigerians. The price should be moderate. This method would help to drive revenue to the tappers. It would also aid in creating jobs for the youths who affiliated the job only to the elderly men. Palm wine tapping, an aspect of food production in Igbo areas, should be strengthened and encouraged through to its Pasteurizing effect. Its values would be superb.

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