

## Full Length Research Paper

# Production preference and importance of fruit species in home garden among rural households in Igbo-Eze North Agricultural Zone of Enugu State, Nigeria

Dimelu, M. U. and Odo, R. N.\*

Department of Agricultural Extension, Faculty of Agriculture, University of Nigeria, Nsukka, Enugu State, Nigeria.

Accepted 12 November, 2013

The study examined production preference and importance of fruits in home garden using one hundred randomly selected household heads. Data were collected by use of structured interview schedule and analysed using descriptive statistics. Household produced *Treculia Africana* (100%), *Anacardium occidentale* (100%), *Psidium guajava* (100%), *Citrus* spp. (100%), *Carica papaya* (93%) and *Manifera indica* (90%) fruits for nutritional purpose, while fruits of major economic importance were *Irvingia gabonensis* (98.0%), *Kola acuminata* (97.0%), *Persea Americana* (88.0%), *Spitium sativum* (84.0%), *Citrus* spp (80%), *Pentaclethra macrophyllum* (78%), *Musa-sapientum* (71.0%) and others. Fruits of social importance were *Kola macrophyllum* (100%), *Garcina kola* (100%), *A. occidentale* (100%) and *Cocos nucifera* (58%); and only *G. kola* (100%) was of medicinal benefit to households. The most preferred fruits for production in home garden were *Irvingia gabonensis* (1<sup>st</sup>), *K. acuminata* (2<sup>nd</sup>), *Citrus* spp. (3<sup>rd</sup>), *Persea americana* (4<sup>th</sup>), *Dennettia tripatale* (5<sup>th</sup>) and the least preferred was *Manifera indica* (15<sup>th</sup>) fruit species. Preference was based on input requirement, resistant to pest and diseases, frequency of fruiting, availability of market and others. Extension and research should promote, intensify research/training to increase awareness on nutritional and medicinal importance of most fruit species particularly the less preferred to guide against extinction.

**Key words:** Fruit, production, home garden, economic, nutritional, medicinal, social.

## INTRODUCTION

Fruits are widely accepted as important component of a healthy diet and adequate consumption could help to reduce a wide range of diseases. They play a significant role in human nutrition, especially as sources of vitamins C (ascorbic acid), A, thiamine (B<sub>1</sub>), niacin (B<sub>3</sub>), pyridoxine (B<sub>6</sub>), Folicin (also known as folic acid or folate), (B<sub>9</sub>), E, minerals, and dietary fiber (Craig and Beck, 1999; Quebedeaux and Eisa, 1990). According to Food and Agriculture Organization/ World Health Organization (FAO/WHO) (2004), approximately 16.0 million (1.0%) disability adjusted life years (DALYs; a measure of the

potential life lost due to premature mortality and the years of productive life lost due to disability) and 1.7 million (2.8%) of deaths worldwide are attributable to low fruit and vegetable consumption. The report showed that insufficient intake of fruit and vegetables is estimated to cause around 14% of gastrointestinal cancer deaths, about 11% of ischaemic heart disease deaths and about 9% of stroke deaths globally. Thus, promoting increased production (for availability, affordability, and access) and consumption for maximum health benefits is a global concern.

\*Corresponding author. E-mail: mabeldimelu@yahoo.com.

The FAO (2007) reported that the production of high value agricultural commodities such as vegetable, fruits, and milk is growing at a fast rate. According to the report, annual growth of high value agricultural production between 2004 and 2006 is 2.9% (vegetable), 3.0% (fruits), 4.0% (meat), and 4.0% (milk). Developing countries account for about 98% of total production, while developed countries account for 80% of world import trade (FAO, 2004). Also, the major tropical fruits account for approximately 75% of global tropical fresh fruit production.

In the same vein, worldwide food demand is shifting from such basic commodities as cereal and rice to products with higher value added such as vegetables, fruits, fats, meats and oil (von Braun, 2007). Hence the composition of food budget is shifting from the consumption of grains and other staple crops to vegetables, fruits, meat, dairy and fish. However in many developing countries like Nigeria and Brazil the shift to more value added products is less pronounced and statistics showed a decline. Von Braun (2007) reported that in Brazil, Kenya and Nigeria, the consumption of some high value products declined probably due to growing inequality in some of these countries. More than three-quarters of adults in less developed countries consume less than the minimum recommended five daily servings of fruits and vegetables. In Sub-Saharan Africa the level of fruit and vegetable consumption ranges from 27 to 111 kg per capita per year, far below the WHO/FAO minimum recommendation of 146 kg per capita per year. Moreover, while vegetable consumption is almost universal in most Sub-Saharan Africa; the consumption of fruits is much less common and varies across countries. Also the average consumption (in kg per capita per year) is lower for fruits than vegetables in most countries (Ruel et al., 2004). The authors further reported that consumption of both products is generally higher in urban areas compared to rural areas.

Generally, situations suggest a significant gap in mean consumption of fruits and vegetable across countries, sectors/locations and economic groups. Thus, in spite of the growing body of evidence on the protective effect of fruits and vegetable, their consumption/intake is still grossly inadequate. The global production as well as consumption is expected to grow to meet WHO/FAO minimum recommendation for fruit and vegetable intake. Nigeria is credited with production of variety of fruits such as mangoes, watermelon, guava, pineapples, pawpaw, oranges, tomatoes, tangerines, and many other indigenous fruits (Adenegan and Adeoye, 2011). Specifically, Enugu State with its characteristics temperate ecology is known to favor the production and growth of several tropical fruits. Many rural farmers in the state explore this advantage particularly in the face of increasing crop failure perceived to be associated with climate change. This is because climate change alters planting pattern, reduces yield of crops and animals, affect flowering periods of crops, gestation and

reproduction in wild life (Akpan et al., 2010). Consequently, there is increased rural household interest in home garden and also establishment of urban - intensified home production of fruits. Different type of fruits that are unevenly distributed, both exotic and indigenous fruits are found either protected or cultivated in home gardens. It is therefore a paradox that though most of the fruits are produced in the rural communities, the consumption levels has remained below the FAO recommendation and lower than the consumption level in urban cities. Moreover, distribution, access and availability of the fruit species largely varied in the home gardens, hence the volume of production and supply differ. Therefore the study aimed to ascertain the perceived importance of fruits species in home gardens, production preference of fruits species and reasons for preference of fruit species in home garden among households.

## METHODOLOGY

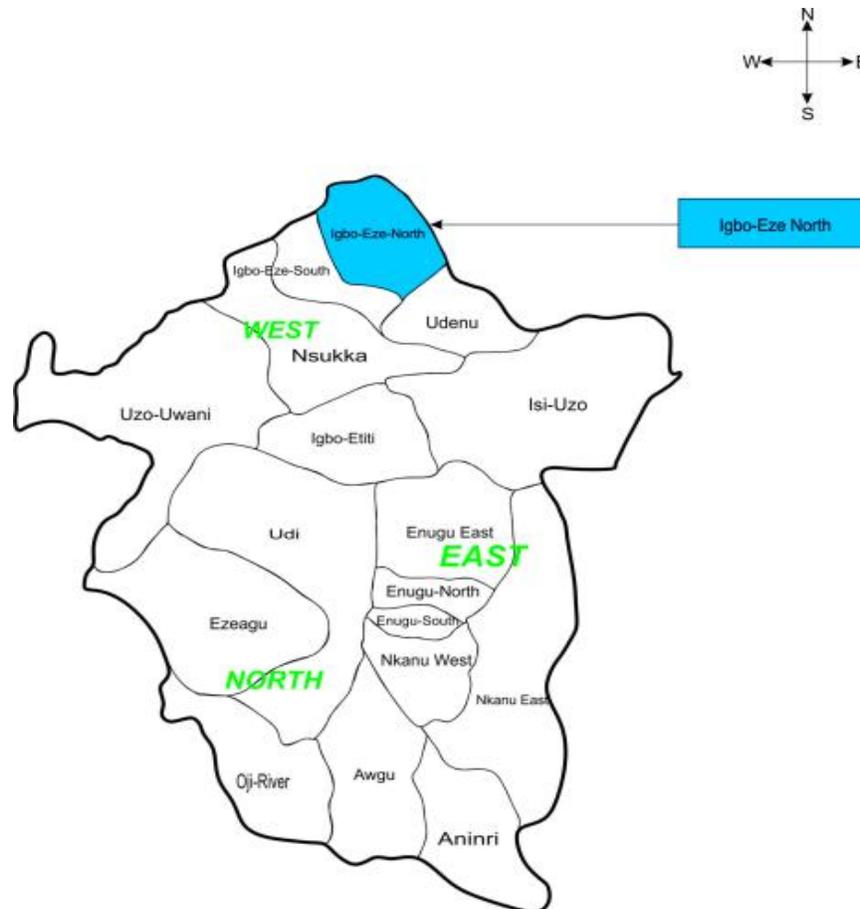
The study was carried out in rural communities of Enugu- Ezike North Agricultural Zone of Enugu State. Household heads constituted the population for the study. Out of three local government areas in the zone, one local government area (Igbo-Eze North Local Government Area) was purposively selected because of the volume and intensity of fruit production in the area (Figure 1). Igbo-Eze North Local Government Area comprised 4 autonomous town communities namely: Umuozzi, Umuitodo, Essodo, and Ezzodo. A proportionate random sampling technique was used to select 5, 2, 2, and 1 villages from Umuozzi, Umuitodo, Essodo, and Ezzodo town communities, respectively. Thus, a total of ten (10) village communities was used. From each of these villages, ten (10) households' heads were randomly selected from list of households provided by informants using simple random sampling techniques. A total of 100 respondents were used for the study. Structured interview schedule was used to obtain relevant information based on the objectives. Respondents were asked to indicate the perceived importance of fruits in their home garden under four major categories-economic, medicinal, nutritional, and social. Data on the households' production preference were collected by asking the respondents to arrange fruits in their home garden in order of preference using-1, 2, 3, 4, 5 etc. The mean preference by fruits was used to determine the most preferred fruits. Also the respondents indicated against eight listed variables (frequency of fruiting, ease of processing, early maturity, etc) the perceived reasons for preference. Data collected were analysed using percentage and mean.

## RESULTS AND DISCUSSION

### Perceived importance of fruits in home garden

#### *Economic importance*

The major fruits cultivated in home garden for economic purposes were ogbono (*Irvingia gabonensis*) (98.0%), kola (*Kola acuminata*) (97.0%), avocado (*Persea americana*) (88.0%), pear (84.0%), orange *Citrus* spp.) (80%), ukpaka (*Pentaclethra macrophyllum*) (78%),



**Figure 1.** Map of Enugu State showing Igbo-Eze North Local Government Area.

banana (*Musa sapientum*) (71.0%) and plantain (*M. paradisiaca*) (59.0.0%) (Table1). A lesser proportion (39.0, 30.0, 27.0, 24.0, 23.0 and 16.0%) of the respondents indicated that udala (*Chrysophyllum albidum*), pawpaw (*Carica papaya*), black pear (*Dacryodes edulis*), mmimi (*Dennettia tripatata*), pineapple (*Ananas comosus*), and mango (*Manifera indica*) were domesticated for economic purposes, respectively. Only one percent had coconut in their home garden for the same reason. This collaborate with the general view that fruits and fruits vegetables play a key role in income generation (Adebooye, 2003), contribute to livelihood enhancement (Poulton and Poole, 2001) and apart from consumption, they are increasingly being sold in the market. For instance, Adebisi (2004) reported that income from *Garcinia cola* (bitter cola) in south eastern parts is used to cover schooling cost and other social obligations. In 1999 export of *D. edulis* (black pear) from central Africa and Nigeria to France, Belgium and U.K were worth more than US\$ 2 million per annum (Awono, 2002). Moreover, in Cameroon, trade in banana, kola spp, *D. edulis* and others within Cameroon and neighboring countries was worth US\$ 1.75 million in the

first half of 1990 (Ndoye, 1997; Temple, 2001).

In addition to financial gain accrued from fruits, other attractions of these fruits may have root in the fact that they are less labour-intensive than conventional crops and so are planted where labour is a limiting factor. Labour shortages are common especially in areas experiencing rural-urban youth migration in search of white cola job. Besides, fruit production is done with little capital investment. Furthermore, depending on areas, some fruit species may be more economically important than others to local livelihoods. For example, in a village in southern Nigeria, the sale of ogbono is considered to be the primary cash income source for 30% of households and secondary cash income source for another 55% of households (Adebisi, 2004).

On the other hand, Ukwa (*Treculia africana*) and bitter kola (*G. kola*) were not perceived by respondents as economic fruits contrary to assertion made by Adebisi (2004) that the sale of *G. cola* (bitter cola) nuts bring about 8% of household's annual total income in south western parts of the country and also in foreign exchange. Similarly, Ukwa according to Ebuehi (2006) constitutes a strategic food reserve of essential food

**Table 1.** Percentage distribution of respondents by perceived importance of fruits in home garden (n=100).

Fruits	Percent importance			
	Economic	Medicinal	Nutritional	Social
Mango ( <i>Manifera indica</i> )	16.0	-	90.0	53.0
Orange ( <i>Citrus spp</i> )	80.0	-	93.0	64.0
Banana ( <i>Musa-sapientum</i> )	71.0	-	5.0	-
Plantain ( <i>M. paradisiacal</i> )	59.0	-	17.0	-
Pineapple ( <i>Ananas comosus</i> )	23.0	1.0	49.0	3.0
Ukpaka ( <i>Pentaclethra macrophyllum</i> )	78.0	-	64.0	-
Udala ( <i>Chrysophyllum albidum</i> )	39.0	-	25.0	2.0
Ogbono ( <i>Irvingia gabonensis</i> )	98.0	-	1.0	-
Ukwa ( <i>Treculia africana</i> )	-	-	100.0	-
Mmimi ( <i>Dennettia tripartale</i> )	24.0	-	-	17.0
Kola ( <i>Kola acuminata</i> )	97.0	-	-	100.0
Avocado ( <i>Persea Americana</i> )	88.0	-	87.0	-
Black pear ( <i>Dacryodes edulis</i> )	27.0	-	-	-
Pear ( <i>Spitium sativum</i> )	84.0	-	63.0	-
Cashew ( <i>Anacardium occidentale</i> )	-	-	100.0	100.0
Guav ( <i>Psidium guajava</i> )	-	-	100.0	-
Coconut ( <i>Cocos nucifera</i> )	1.0	-	56.0	58.0
Bitterkola ( <i>Garcina kola</i> )	-	100	--	100.0
Pawpaw ( <i>Carica papaya</i> )	30.0	-	93.0	55.0

nutrient that have become delicacies and specialized meals which are available at certain critical period of the year when these nutrients are very scarce. Ideally, the above scenario is expected to have stimulated sustained interest for its commercial production and distribution in home garden. The finding however, suggests that the fruit species mainly exist as protected fruits in home garden; and production is limited to home consumption.

### Medicinal importance

Table 1 shows that all (100%) the respondents grew bitter kola for medicinal reason and only one percent had pineapple in their home garden for similar purpose. Other fruits were of no medicinal importance to the respondents. Largely, this confirms Adebooye (2003) who asserted that in addition to contributing to food security, fruits are also sources of folk medicine. For instance the seed of *G. kola* (bitter kola) are used in folk medicine and in many herbal preparations for the treatment of ailments because according to Terashima (1999), it contains a complex mixture of biflavonoids, xanthenes, and prenylated benzophenones, and has antioxidant activities (Terashima, 2002). The major component of *G. kola* is kolaviron and this has been reported to significantly prevent hepatotoxicity and has a chemo-preventive effect against carbon-tetrachloride and potassium bromate (Farombi, 2002). The kolaviron may also protect against carcinogen and drug induced

oxidative and membrane damage and such may be relevant in the chemotherapy of liver and kidney diseases. Adodo (2000) reported that when chewed raw, it helps to soften cough and remove tonsillitis.

Similarly, Oguntola (2008) reported that pineapple has high amount of mineral, vitamins, and small amount of fats and protein, an anti-oxidative vitamin C and enzymes bromelin which can protect against breast cancer. Contrary to the findings, other fruits perceived of no medicinal importance by the respondents such as *D. eduli* (black pear), *Xylopi aethiopic a (uda)*, *Spondic mombin* (jijkara) and others were reported to have demonstrated their contribution to the treatment of diseases such as sickle cell anemia, snake bite etc. Also Mango is rich in beta-carotene, an antioxidant potent in helping to cure various diseases, including dermatitis, flu, asthma, vision problems, bleeding gums, sore throat, inflammation of the airways, shortness of breath and ulcers. It can also handle boils, scabies, eczema, abdominal colic, diarrhea, motion sickness, worms, loss of appetite, vaginal discharge, menstrual disorders, hernias and rheumatism. In the same vein, banana fruit contains health promoting flavonoid poly-phenolic antioxidants such as *lutein*, *zea-xanthin*,  $\beta$  and  $\alpha$ -*carotenes* in small amounts which help act as protective scavengers against oxygen-derived free radicals and reactive oxygen species (ROS) that play a role in aging and various disease processes (www.localharvest.org/blog/20618/entry/medicinal.values.of.the.tropical).

Generally the results underpin the report by WHO (2001) that 80% of the world population use medicinal plants in the treatment of diseases and in Africa, the rate is much higher. According to Iwu (1999), they are relatively safe than their synthetic alternatives, thus offering more affordable treatment.

### **Nutritional importance**

Table 1 shows that 100, 100, 100, 93, 93 and 90% of the respondents domesticated ukwa (*T. africana*), cashew (*Anacardium occidentale*), guava (*Psidium guajava*), orange (*Citrus* spp), pawpaw (*C. papaya*) and mango (*M. indica*) fruits for nutritional purpose, respectively. Also ukpaka, (*P. macrophyllum* (64.0%), cashew (63.0%), coconut (*Cocos nucifera*) (56.0%), and pineapple (*A. comosus*) (49.0%) were cultivated/protected in home garden for nutritional reason. However, only 1, 5, 17.0 and 25.0% of the respondents had ogbono (*I. gabonensis*), banana (*Musa sapientum*), plantain (*M. paradisiaca*), and udala (*C. albidum*) for nutritional purposes, respectively. Other fruits like mmimi (*D. tripatale*), kola, black pear, and bitter cola were of no nutritional importance to the households. The results confirm the popular assertion that fruits play key role in the nutritional livelihood of the Nigeria population especially in the rural area where people could scarcely pay for meat, milk, and egg (Adebooye, 2003). The author further reported that studies on chemical composition of indigenous fruits have shown that they contain an appreciable amount of crude protein, fat, and oil, energy, vitamin and minerals. Above all, fruits have no cholesterol unlike meat and egg thus providing the body with essential micro nutrients that increase body's anti-oxidative potential as well as dietary fibre which substantially reduce the risk of excessive body weight gain and obesity. Thus, sufficient intake of them provides the body with essential micro-nutrient that increases the body's antioxidative potential as well as dietary fibre. Hence most fruits such as ukwa and ukpaka have today become popular delicacies and specialized meals not only for the rich and urban dwellers but also for rural people and export food.

### **Social importance**

All (100%) of the respondents domesticated kola, bitter kola and cashew for social reasons, while 58% domesticated coconut for similar reasons (Table 1). This corroborated with Terashima (1999) that seeds of bitter kola are major kola substitutes offered to guests in homes and social gathering. Traditionally, kola, bitter kola and coconut play important role in social life of the people. It is widely used across cultures during different ceremonies such as burial, marriage ceremonies, child naming, title taking, and other related traditional

gatherings. They are also popular in pure African traditional religion for it is believed that one cannot talk to gods without a kola nut. When used in ceremonies it shows good reception and acceptance. Thus, it is valued more than anything by guest and virtually no ceremony is performed in most cultures without kola, or bitter kola.

Similarly, mango (53%), orange (64%), pawpaw (55%) were also of social importance to the respondents but are commonly used for entertainment of visitors and friends. They are one of the hungry fruits consumed during relaxation from long journey or drudgery task particularly among farming communities.

### **Production preference of fruits in home garden**

The most preferred fruits by the respondents were ogbono (1<sup>st</sup>), kola (2<sup>nd</sup>), orange (3<sup>rd</sup>), avocado (4<sup>th</sup>), mmimi (5<sup>th</sup>), banana (6<sup>th</sup>) and others (Table 2). Also the least preferred fruits were pineapple (14<sup>th</sup>) and mango (15<sup>th</sup>). The reasons for the observed preference are discussed as follows:

#### **Reasons for preference**

##### **Frequency of fruiting**

This means how often a particular fruits produces in a year. The respondents preferred ogbono (97%), ukpaka (80%), orange (70%), avocado (68%), coconut (65%), plantain (60%), banana (58%), and kola (50%) for the frequency of fruiting (Table 3). For instance, ogbono (Bush mango tree) produces two times every year. The first time of fruiting is between April and June while the second time is between August and October. Also, ukpaka fruits produce continuously throughout the year. Similarly, orange tree fruits produce at least two times every year depending on geographical location. However, a lesser proportion (25, 25, 20, 20, 15, 13 and 10%) of the respondents preferred mmimi, pineapple, black pear, udala, ukwa, pear, and ukwa in the home garden for the same reason. High frequency of fruiting is a crucial factor in production decision because it offers households opportunities for regular income, and resilience especially at off-farm season or crop failure.

##### **High productivity**

This has to do with the quantity of fruits per tree. Involvement of the respondents in production of ogbono (100%), ukpaka (96%), black pear (70%), plantain (67%), pear (63%), pawpaw (60%), banana (59%), coconut (58%), avocado (52% and orange (50%) in home garden was on the basis of productivity. These fruits turn out heavy produce each year, ensuring greater income. Only 32 and 20% preferred udala and mango because of high

**Table 2.** Fruit preference among respondents (n=100).

Fruits	Order of preference
Ogbono	1 <sup>st</sup>
Kola	2 <sup>nd</sup>
Orange	3 <sup>rd</sup>
Avocado	4 <sup>th</sup>
Mmimi	5 <sup>th</sup>
Banana	6 <sup>th</sup>
Pear	7 <sup>th</sup>
Udala	8 <sup>th</sup>
Plantain	9 <sup>th</sup>
Ukpaka	10 <sup>th</sup>
Black pear	11 <sup>th</sup>
Pawpaw	12 <sup>th</sup>
Coconut	13 <sup>th</sup>
Pineapple	14 <sup>th</sup>
Mango	15 <sup>th</sup>

productivity. In reality, mango and udala often produce large quantity of fruits, though not all round. Productivity is an important determinant of choice of crops/fruits and farming system. However it is a function of factors such as varieties, fertility of soil, disease and pest, edaphic factors, agronomic practices etc.

### **High pricing of produce**

This is concerned with how much is realized from the sale of each fruit produced. Ogbono (100%), kola (100%) and ukpaka (96%) were highly preferred in home gardens because of high pricing (Table 3). The respondents indicated preference for banana (61%), plantain (61%), black pear (48%), pear (43%) and avocado (40%) for the pricing. Other fruits including mmimi (20%), udala (28%), mango (18%) were less priced. Currently, the prices and demand for ogbono, ukpaka, kola, banana and plantain are very impressive and attractive. Largely the profit accrue from them are the driver of household interest in their production in home garden. Strong market structure is one of the major institutional factors that drive supply-demand chain. It is even more serious for fruits because of the relatively short ripening period and reduced post-harvest life particularly where facilities and capability for processing and preservation are limited.

### **Early maturity**

This refers to the time between planting and first harvest. Table 3 shows that production of ogbono (96%), banana (94%), plantain (94%), ukpaka (93%), pawpaw (89%), pineapple (86%), and pear (67%) were produced because of early maturity features. Also, production of

guava (46%), mango (23%), udala (18%), coconut (14%), and orange (10%) were less preferred as early maturing fruits. Certainly, some fruits mature early and others take a longer time to mature. Most fruit plants mature within the period of six months to five years before fruiting. Usually farmers are attracted to fruit with shorter period of maturity for quick economic return. Besides, fruits with short fruiting period lend easily to home garden.

### **Low input requirements**

The respondent indicated that their involvement in production of all the fruits in home garden was because of the low input requirements (Table 3). Unlike conventional crops such as yam, cassava and maize, most fruits like ogbono, avocado, pear and ukpaka rarely require inorganic input (example fertilizer and herbicide). It is not surprising because according to Odebode (2006), home gardening is the cultivation of small portion of land which may be at the back of the home or within a walking distance from home. Hence soil fertility largely depends on the use of kitchen waste, animal dung and compost manure. It is both environmentally friendly and sustainable. Nevertheless, insecticide and pesticide are sometimes used for treatment of pest and diseases, particularly in cases of persistent fruit abortion and disease outbreak.

### **Ease of harvest**

The respondents preferred pawpaw (89%), guava (76%), pineapple (67%), cashew (63%), mmimi (56%), banana (50%), plantain (50%) because of easy of harvest (Table 3). Lesser proportion (48, 43, 20%, 10, 2.0%) of the respondents cultivated/protected pear, kola, avocado, ogbono and mango in home due to ease of harvest, respectively. Naturally, some of these fruits such as black pear, ogbono, ukwa and udala, avocado and other standard-sized fruit trees grow too tall that harvesting them becomes very difficult, particularly where they have grown for many years. In such situation, the cost of labour becomes very high and often results to waste of ripe fruits, low quality products, environmental pollution from over ripped fruits and subsequently poor return for the farmers This discourages households from venturing into cultivating/protecting such fruits.

### **Resistance to pest and disease**

About 79% of the fruits identified in home garden were preferred by the respondents because of the high resistance to pest and diseases. They include pineapple (100%), ukpaka (100%), udala (100%), ogbono (100%), ukwa (100%), mmimi (100%) avocado (100%), black pear (100%), cashew (100%), guava (100%) and others.

**Table 3.** Percentage distribution of respondents based on reasons for preference (n=100).

Fruit	Reasons for preference									
	Hff (%)	GP (%)	Eh (%)	Ep (%)	Am (%)	Hpp (%)	Em (%)	Lir (%)	Rpd (%)	Sv (%)
Mango	-	20.0	2.0	-	10.0	18.0	23.0	100.0	53.0	53.0
Orange	70.0	50.0	-	-	28.0	4.0	10.0	100.0	13.0	64.0
Banana	58.0	59.0	50.	72.0	98.0	61.0	94.0	100.0	65.0	-
Plantain	60.0	67.0	50.	72.0	98.0	14.0	94.0	100.0	65.0	-
Pineapple	25.0	-	67.	-	52.0	96.0	86.0	100.0	100.0	3.0
Ukpaka	80.0	96.0	-	100.	98.0	28.0	93.0	100.0	100.0	-
Udala	15.0	32.0	-	-	29.0	100.	18.0	100.0	100.0	2.0
Ogbono	97.0	100.0	10.	-	29.0	-	96.0	100.0	100.0	-
Ukwa	10.0	-	-	6.0	100.	23.0	-	100.0	100.0	-
Mmini	25.0	-	56.	-	-	100.	-	100.0	12.0	17.0
Kola	50.0	-	43.	2.0	60.0	40.0	-	100.0	100.0	100.0
Avocado	68.0	532.0	20.	-	100.	48.0	-	100.0	100.0	-
Black pear	20.0	70.0	-	-	62.0	46.0	-	100.0	100.0	-
Pear	13.0	63.0	48.	-	75.0	-	67.0	100.0	100.0	-
Cashew	-	-	63.	-	67.0	-	-	100.0	100.0	100.0
Guava	-	-	76.	-	-	-	46.0	100.0	100.0	-
Coconut	65.0	58.0	-	-	-	-	14.0	100.0	100.0	58.0
Bitter kola	-	-	-	-	-	-	-	100.0	100.0	100.0
Pawpaw	-	60.0	89.	-	-	-	89.0	100.0	41.0	55.0

\* Multiple response; HFF = High frequency of fruiting; Am = availability of market; Lir = low input requirements; GP = greater productivity; PP= high price of produce; Rpd = resistance to pests and diseases; EP = ease of processing; EM = early maturity; SV= social value.

Only 13 and 12%, respectively of the respondents indicated preference for orange and kola because they are less resistant to pest and diseases. It is possible that most of the fruits are indigenous fruit trees which characteristically are more adaptable to the environment. Pest and diseases stands as one of the major threats to fruit production. It results to delayed maturity, low yield, poor quality products and low income for households. In this case the use of improved resistance varieties, application of routine agronomic practices becomes imperative.

### **Ease of processing**

Majority (100, 72 and 72%) of the respondents preferred ukpaka, banana, and plantain because they are easy to process, respectively, while only 6 and 2%, respectively expressed preference for ukwa and kola for the same reason. These are actually fruits that undergo some processes, sometimes rigorous before consumption. Preferences of other fruits (73.7%) were not influenced by ease of processing. Most of these fruits (e.g pawpaw, avocado, orange, etc) are edible in their natural form and as a result no processing is required. However, due to high perishability of some like banana, pawpaw, pineapple, mango, orange, and many others, some are often, processed into different products such as juice,

wine, vitamin supplements, flavours, laxative and others (Rallof, 2000). On the other hand, some like oil bean, ukwa, African black pear etc cannot be consumed unless they are subjected to either traditional or industrial processing.

### **Conclusion**

The results show that fruits in home garden were of economic, medicinal, nutritional, and social importance to households, but the major attraction to their cultivation in home garden of household is economical in terms of income generation, labour, market e.t.c. Households preferred some fruits to others. The most preferred fruits were ogbono (*I. gabonensis*) followed by kola (*Kola acuminata*), orange (*Citrus* spp), avocado (*P. americana*) and others, while the least preferred was mango (*M. indica*). Preferences were based on input requirement, resistant to pest and diseases, frequency of fruiting, availability of market, maturity and others. Extension should intensify awareness on the nutritional and medicinal benefits of less preferred fruits species to increase interest, production and consumption, particularly among rural households. Above all, building capability, skill, knowledge on processing and preservation of the fruits, particularly the indigenous fruits to increase interest, production and guard against

extinction is pertinent.

## REFERENCES

- Adebisi AA (2004). A Case study of *Garcinia cola* production in area of Omo forest reserve, South-west Nigeria. pp. 115-132.
- Adebooye OC (2003). Ethnobotany Of indigenous leafy and fruit vegetables of southwest Nigeira. Italy, Delpinoa, University of Naples 45:295-299.
- Adenegan KO, Adeoye IB (2011). Fruit consumption among University of Ibadan students, Nigeria. ARPN J. Agric. Biol. Sci. 6(6):18-21.
- Adodo A (2000). Herbs for healing:Receiving Gods healing through nature. Decency Publisher, Ilorin, Nigeria.
- Akpan UE, Eric EE, Udoh CE, Afolarin TA, Edeh SG (2010). Forest conservation and food security in an unstable climatic condition. Proceedings of the 44<sup>th</sup> Annual Conference of Agricultural Society of Nigeria, Nigeria.(Date Unknown)"LAUTECH 2010". pp. 633-635.
- Awono A (2002). Production and Marketing of Safou (*Dacryodes edulis*) in Cameroon and Internationally: Market Development Issues. Fst Trees and livelihoods 12:125-147.
- Craig W, Beck L (1999). Phytochemicals: health protective effects. Can. J. Diet. Pract. Res. 60:78-84.
- Ebuehi OA (2006). Physico-chemical and fatty acid content of water melon seed oil, Nigeria. Food J. 24(1):17-24.
- FAO (2004). Food and Agriculture Organization of the United Nations. 2004. FAOSTAT.
- FAO (2007) FAOSTAT database. www faostat.fao.org/default.aspx.
- FAO/WHO (2004). The state of food insecurity in the world: Monitoring Progress towards the World Food Submit and MDGs. Rome. FAO.
- Farombi EO (2002). Kolaviron modulates Cellular redox status and impairment of membrane protein activities by Potassium bromoate. Pharm. Res. 45:613-668.
- Iwu MM (1999). Perspective in new crops and new uses. ASHS Press Alexandria V.A., pp. 457-462.
- Ndoye O (1997) Marketing of non-timber forest products in the humid zones of Cameroon. Rural Development Network ODI, London. P. 22C,
- Odebode OS (2006). Assessment of home gardening as a potential source of household income in Akinyele Local Government Area of Oyo State, Nigerian. J. Hort. Sci. 2:47-55.
- Oguntola S (2008). Paw paw, Nature's natural Antibiotics for Typhoid. Htt.www.tribute.com.ng/2802008/thr/hlt2.html. Accessed 3/3/2010.
- Poulton C, Poole N (2001). Poverty and fruit tree research. FRP Issues and Options papers No. 6. Forestry Research Programme, U.K.
- Quebedeaux B, Eisa HM (1990). Horticulture and human health: Contributions of fruits and vegetables. Proceedings of 2<sup>nd</sup> Intl. Symp. Hort. and Human Health, Hort. Sci. 25:1473-1532.
- Rallof J (2000). Detoxifying Desert's Manna; Farmers need no longer fear the sweet pea's dry land cousin. In Science News, The weekly news magazine for Science: 158(5). www.science.news.org/20000729/nobl.asp.
- Ruel MT, Minot N, Smith L (2004). Pattern and determinants of fruit and vegetable consumption in Sub Saharan Africa: A multi country comparism. Background Paper for the Joint FAO/WHO Workshop on Fruit and Vegetable for health, 1-3September, Kobe, Japan, pp. 1-5.
- Temple L (2001). Quantification des production des eschangos der fruits et legumes au Cameroon.Cashiers d'e tude et de recherches Francophones. Agric. 10:87-94.
- Terashima K (2002). Powerful antioxidative agents based on Garcinoic acid from *G. Kola*, Biol. Org. Chem. 10:1619-1625.
- Terashima K (1999). A study of bioflavoid from the stem of *G. kola*. Heterocycles 50:238-340.
- von Braun J (2007). The world food situation: New driving force and required actions. Food Policy Report, Washington D. C
- World Health Organization (WHO) (2001). Legal status of traditional medicine and alternative medicine: A world wide view. WHO Publishing.www.localharvest.org/blog/20618/entry/medicinal.values.of.the.tropical accessed 17/10/2013.