Benefits and Challenges of Home Garden in Rigachikun District of Igabi Local Government Area of Kaduna State, Nigeria

Ijah, A.A.[1], Ishola, B.F.[2], Ayodele, J.T.[1], Danbaki, C.A.[1], Oladele, O.N.[1], Yahaya, U.F.[1] and Olukotun, O.[1]

[1]*Federal College of Forestry Mechanisation, Afaka, Kaduna, Nigeria*
[2]*Forestry Research Institute of Nigeria, Jericho Hill, Ibadan, Oyo State, Nigeria*

Abstract*: The study was conducted to investigate the benefits and challenges of home garden practice in Rigachikun District Igabi Local Government Area of Kaduna State. Data were collected randomly through the use of well structured questionnaire from 40 home gardeners. Descriptive statistics such as mean, percentage, frequency distribution and table were used to analyze the data. The findings revealed that majority (57.50%) of the home gardeners were male, while majority (95.00%) of the gardeners are in their working age group of between 21 – 60 years with about 85.00 % of the respondents having over 5 years experience in home gardening. The result further indicated that thirty two crops of different habits and usage were identified to be cultivated in the home gardens. The result indicates that these nine crops; cowpea (87.50%), groundnut (82.50%), maize (75.00%), tomato (70.00 %), millet (65.00%), sorghum (60.00%), onion (57.00%) while pepper (50.00%) and sweet potato (50.00%) were cultivated by the majority of the gardeners. Some of the crops identified in the home gardens are for medicinal purposes. The result showed that some of the benefits of home garden practice include; better nutrition (95%), generate more income (95%), 90.00% of them have home gardens to obtain fresh food items like vegetables, for recreation (77.50 %), for reduction in family food budget (70.00 %) , for preservation of indigenous knowledge and culture (50.00%), environmental benefits/beautification (50.00%), for easing of emotional stress (37.50%), for medicinal purpose (37.50%), relief of mental fatigue, (32.50 %), promoting social justice and equity(27.50%), for important education or learning opportunities (20.00%), for empowering women (12.50%) improved mood; satisfaction and pride and increased self-esteem (10%) and courage to do things differently in life (10%) as benefits they derived from home gardens However the practice of home garden in the study area is hampered by constraints such as inadequacy of farm inputs, poor soil fertility and attack of insect pests and diseases. The study therefore, recommends that gardeners should be encouraged to organize cooperative societies so as to pull their resources together to enable them to get enough capital to purchase necessary farm inputs required for home garden and to be able to control pests and disease attacking their crops.

***Keywords*: Benefits, Challenges, Home Garden, Type of Crops Cultivated, Rikachikun**

I. INTRODUCTION

Home garden refers to a farming system whereby land around or at a walking distance or a stone throw from the homestead are cultivated to produce crops that are consumed by the households and sometimes the surplus are sold to generate additional income for the family. It is a farming system that is as old as human existence. Home gardens could be at the backyard of the house or may be at the front or sides of the house or could be a field adjacent to the house or not too far from the house. They are usually fenced or may be within a fenced apartment. Homestead gardens are also called kitchen gardens, backyard gardens, compound gardens, rooftop gardens and are type of agriculture that has been in practice since the beginning of the agricultural system. It is a garden not far from the home that is owned and maintained by the household and kept mainly for household food supply (Galhena *et. al.*, 2013). Home garden can be defined as a farming system that combines different physical, social and economic functions on the area of land around the family. Home garden has long tradition in many tropical countries. Tropical home gardens consist of an assemblage of plants, which may include trees, shrubs, and herbaceous plants growing in or adjacent to a homestead or home compound. It also includes rearing of animals; snail and aquaculture .The home garden system is the most widespread and culturally practiced agro forestry system among the rural communities. A well developed home garden is a complete farming system. It is a low cost production systems with a constant and relatively high productivity. The home gardens are small homes holdings with individual farm size ranging between 0.1-0.5hectares of land. In spite of the very small average size of the home gardens, they are characterized by a high species diversity. The density and complexity of home garden depend on the climate and ecological zone in which they exist and human population density. Home gardens usefully have been defined as "a small scale, supplementary food production system by and for household members that mimics the natural, multi-layered ecosystem." (Hoogerbrugge and Fresco, 1993). Traditional gardens contain a wide variety of annual, perennial and semi-perennial crops, shrubs and trees that have been properly adapted to micro-climatic variations and maintained with little purchased farm inputs (Faber and Benade, 2003). Sometimes, crops are also kept together with small livestock such as poultry, goat, sheep and pig. Common crops seen in a typical Nigeria home garden include cassava, maize, yam, fluted pumpkin, bitter leaves, water leaves, beans, curry, scent leaves, banana, and plantain, as well as

mango, guava, orange, pawpaw, palm trees etc. It is a garden where a little of everything ranging from crops to medicinal herbs can be found. Also, small animals such as poultry, goats, sheep, and pigs can be found in these homes.

Nwaneke and Chude (2017) highlighted importance of home gardens to include: (a)Homestead gardens could be used to enrich diets in Nigeria as it serves as an avenue for making food available to the most vulnerable low income population. (b)Home garden will give households added immunity against fluctuating global food prices. (c) Home garden can serve as a targeted policy approach to providing pregnant and breastfeeding mothers with nutritious food to promote breastfeeding. (d) Home garden will give the families the confident of all year-round supply of fresh vegetables, fruits, legumes and cereals thereby successfully combating food insecurity which is one of the main reasons for poor complementary feeding in Nigeria (FMH, 2005) and (e) Keeping of homestead garden teaming with nutrient rich fruits and vegetable can serve as a means of income diversification for farmers who devote most of their time on cash crops. A well developed home garden contributes significantly to daily food needs, supplying households with all the non-staple foods they needs such as fruits, vegetables, legumes, coconuts, and root crops as well as other species. The livelihood benefits of home gardens go beyond those that are related to nutrition and subsistence. Sales of products of home garden significantly improve the family financial status. Home gardens have been outlined as a means of providing for the unemployed and low income in rural communities (Glover, 2004). Home gardens are vehicles for economic emancipation while providing social and recreational benefits for gardeners (Alaimo, Reischi and Allen, 2010). According to Koyenikan (2007), household's benefit from home gardens includes increase in household food production, improved health status of the household, income generation and nutrition. Multiple social benefits of home gardens include enhancing food and nutritional security in many socio-economic and political situations, improving family health and human capacity, empowering women, promoting social justice and equity, and preserving indigenous knowledge and culture (Mitchell and Hanstad, 2004). Raymond *et.al.* (2018) in their study reported a range of environmental, psychological, physiological and social benefits associated with home gardening. They reported that despite home gardening often being a solitary activity, most gardeners valued the multiple forms of social interaction that occurred during important social events in their garden, or when connecting with passers-by. They also reported that the home gardeners also cited benefits related to connection to nature and place attachment; attention restoration; reduced stress and anxiety; improved mood; satisfaction and pride; increased self-esteem and courage to do things differently in life; and, important education or learning opportunities.

Some benefits of home garden as reported by various authors include enhancing household food security and well-being (Galhena *et.al.,* 2013); as sites to grow and produce food items for family consumption (Galhena *et.al.,* 2013), to build food security and a sustainable food future (Calvet-Mir et al. 2016); supports livelihoods by providing informal sources of income for households (Kumar and Nair 2004); allows for daily physical activity; improves mental health; and facilitates social engagement and human-nature connections (Blake and Cloutier-Fisher 2009). It also strengthens household and community resilience to economic or political change (Buchmann 2009); and promotes social justice and equity outcomes (Patalagsa *et al.,* 2015) as reviewed by Raymond *et.al.* (2018).

Hoogerbrugge and Fresco (1993) and Mitchell and Hanstad (2004) provide a review of key constraints to home gardening. Among several constraints, they identified the access to suitable and sufficient land to establish a home garden along with lack of ownership and usage rights of some form as the most important limiting factors. The other constraints include access to capital or credit, access to water, seeds and planting materials, weak extension and advisory services, access to labor, and access to markets. The cultural acceptance of home gardening is also an important constraint as reported by Galhena *et al.*(2013). This study therefore aimed at identifying the benefits derived and the challenges faced by home gardeners in Rigachikun District of Igabi Local Government Area of Kaduna State, Nigeria.

II. METHODOLOGY

A. Study Area

The study was conducted in Rigachikun District of Igabi Local Government Area of Kaduna state. Igabi is one of the four local government area which constitute Kaduna metropolitan city, an important commercial and administrative centre in Northern Nigeria and comprises of different sets of people with diversified socio-cultural characteristics. Igabi local government is located in guinea savannah of Nigeria on latitude 10^0 47' 0" N and longitude 7^0 46'0" E. The headquarter of Igabi Local Government Area is Turunku. The population of Igabi local government area according to 2006 population census was estimated at 430,753 people and projected population of 581,500 people by 2016.(NPC, 2006). Annual rainfall is between 250mm-1000mm and usually begins early May and ends in October and the dry season is between October-April. The major crops produced in the area are cowpea, yam, cassava, maize, millet, guinea corn, Sugarcane and cocoyam. Livestock/animals that are reared in the Local Government Area are poultry, cattle, goat and sheep.

B. Reconnaissance Survey

A reconnaissance survey was carried out in the proposed study area to identify where reasonable number of households is involved in home garden activity for adequate data collection for this research work. The survey result revealed that four villages namely Birnin Yero, Jaji, Morarraban Jos and Rigachikun has higher numbers of home gardens than the

other sixteen villages in the study area so the four identified villages were chosen for the study.

C. Sampling Techniques and Frame

Multi stage sampling technique was employed in this study. In the first stage Igabi local government area was purposively selected out of twenty three local government area in Kaduna state because the researchers reside in the area. At the second stage Rigachikun district was also purposively selected from the local government area due to existence of home gardens in the district. The third stage was the selection of four villages namely Birnin Yero, Jaji, Morarraban Jos and Rigachikun that has higher numbers of home gardens and the final stage was random selection of ten (10) home garden owners (home gardeners) from each of the four (4) selected villages/settlements. This gave the total number of forty (40) respondents

D. Method of Data Collection

Both primary and secondary data were used to achieve the objective of the study. The primary data was collected with the aid of a well structured questionnaire/personal interview from the respondents in the selected households. Data were collected on the following variables; demographic characteristics of respondents, duration of home garden practices, types of crops grown, benefits/uses of home gardens and challenges of home garden operation. Secondary data were also used from literature, such as journals, articles, conference proceeding, text books, internet and other print media.

E. Method of Data Analysis

The data collected from this study were subjected to descriptive statistical analysis. Descriptive statistics such as frequency distribution table, averages, and percentages were used to analysed the data collected.

III. RESULTS AND DISCUSSION

A. Socio – Economic Characteristics of the Respondents in the Study Area.

1). Gender of Home Gardeners: Table 1 shows that men constituted majority (57.50%) of the respondents in home garden compared to women with 42.50 % of the total respondents. The dominant of men in home garden could be due to traditional belief of the people in the area which prohibits women from going out freely to engage in economic activities.

2). Age of Home Gardeners: Table 2 shows that majority of the respondents (65%) were between the age bracket of 31-40 years, while 12.50 % were between the age range of 41-50 years,10% were within the age bracket of 21 – 30 years, 7.50 % fell between the age range of 51 years above and 5% were within the age group of 11- 20 years of age. This shows that majority (95%) of the home gardeners were in their working age group and still possess the strength and energy needed to carry out all agronomical activities of home garden. The result was in conformity with the work of Aworinde *et al.* (2013) who reported that 100 % home gardeners in Odeda area of Ogun state, Nigeria were above 21 years of age.

*3. Marital Status of Home Gardeners***:** Table 3 on marital status indicated that majority (50%) of the respondents were married, Single accounted for (42.50 %), and widows were (5 %) of the total respondents and 2.50% were divorcee. This means that half of the home gardeners in the study area were married.

4). Educational Level of Home Gardeners: Table 4 shows that majority (50.00%) of the respondents possessed secondary school educational background, while this is closely followed by respondent who have attended tertiary education level accounting for (40.00%) of the respondents.7.50% of the home garden owners have no formal education and 2.50% of them had primary education. This implies that majority (90%) of the home gardeners in the study area had post primary education and can read and write. This will help them in adoption of new technologies and innovation. This finding is contrary to the submission of Aworinde *et al.* (2013) in which majority of home gardener investigated had primary school leaving certificate.

5. Occupation of Home Gardeners: Table 5 revealed that (45.00 %) of the home gardeners are traders, followed by (30.00 %) civil servants, while the least (25.00 %) are core farmers. This shows that practice of home garden is not left alone for farmers. This could be as results of the desire of home garden owners in the study area to supplement their income as (75.00%) of respondents are not core farmers. This tends to agree with. Aworinde *et al.* (2013) that home gardeners in Odeda area of Ogun state also practice home garden as a supplementary source of income in addition to their main income generating activities. They reported that 62.3% of the respondents in their study were teachers, transporters, traders and technicians and only 36.7 % were core farmers.

6. Years of Experience of Home Gardeners: Table 6 revealed that 32.50% of sampled home gardeners had 11 - 15years, 16 years and above experience in home gardening respectively. This is followed by 20.00 % of respondents who had between 6- 10 years of experience and only 15% had between 1-5years of home gardening experience. This implies that home gardening is dominated with experienced adult with 85% of them having over 5years experience in this type of farming system. It therefore expected that the home gardeners will achieve high level of productivity.

Table1: Frequency distribution of the respondents in the study area based on gender

Sex	Frequency	Percentage
Male	23	57.50
Female	17	42.50
Total	40	100

Source: Field survey, 2019

.Table 2: Frequency distribution of the respondents in the study area based on age

Age	Frequency	Percentage
11-20	2	5.00
21 – 30	4	10.00
31 – 40	26	65.00
41- 50	5	12.50
51 – Above	3	7.50
Total	40	100

Source: Field survey, 2019.

Table 3: Frequency distribution of the respondents in the study area based on marital status

Marital status	Frequency	Percentage
Single	17	42.50
Married	20	50.00
Widow	2	5.00
Divorcee	1	2.50
Total	40	100

Source: Field survey, 2019.

Table 4: Frequency distribution of the respondents in the study area based on educational level

Educational level	Frequency	Percentage
No – formal	3	7.50
Primary	1	2.50
Secondary	20	50.00
Tertiary	16	40.00
Total	40	100

Source: Field survey 2019.

Table 5: Frequency Distribution of the respondents in the study area based on occupation.

Activities	Frequency	Percentage
Farming	10	25.00
Trading	18	45.00
Civil servant	12	30.00
Total	40	100

Source: Field survey 2019.

Table 6: Frequency distribution of the respondents in the study area based on years of experience.

Years of experience	Frequency	Percentage
1 – 5	6	15.00
6- 10	8	20.00
11 – 15	13	32.50
Above 16	13	32.50
Total	40	100

Source: Field survey 2019.

B. Types of Crop Grown Under Home Garden Practices

The crops that are grown by owners of home gardens in the study area are indicated in Table 7. Respondents cultivated in their home gardens about thirty two crops as identified by the study. The result indicates those crops that are produced by majority (50% and above) of the home gardeners in the study area include cowpea(87.50%), groundnut (82.50%), maize(75.00%), tomato (70.00 %), millet (65.00%), sorghum (60.00%), onion (57.00%) while pepper and sweet potato are cultivated by 50 .00% of the gardeners respectively. The following crops namely cassava(17.50%), water leaf(15.00%), pigeon pea(15.00%), garden egg (15.00%), water melon (10.00%), pawpaw (10.00%), guava (10.00%), curry leaf(10.00%), banana (10.00%), lemon grass(7.50%), carrot (7.50%), pineapple (7.50%) and orange (5.00%) were cultivated by less than 20% of the gardeners. The crops cultivated in these gardens are made up of cereals, legumes, vegetables, spices, fruit trees, herbs, climbers, tubers, roots, shrubs and ornamental trees which were similar to those crops identified to be cultivated in Odeda home gardens as reported by Aworinde *et al.* (2013). Some of the crops identified by the respondents to be cultivated are for medicinal purposes. Crops identified to be medicinal are lemon grass, bitter leaf, garden egg, water leaf, curry leaf, cucumber, onion and pumpkin, mango leaves, pawpaw leaves, guava leaves and moringa plant . The results indicate that some of the garden users had one medicinal plant or the other in their home garden beside their other possible uses. Vegetables and fruits can prevent the likelihood of adult onset diabetes; they can reduce use of medicine and could help most people get off their drugs completely (Malkmus *et al*., 2006). Tropical home gardens consist of an assemblage of plants, which may include trees, shrubs, and herbaceous plants growing in or adjacent to a homestead or home compound (Nari, 2009).

C. Benefits and Uses of Home Garden

The benefits of keeping home gardens are presented in Table 8. There were about fifteen variables of interest for social, economic, environmental, physiological and psychological benefits. This was patterned following Kelechi et al. (2014) and Raymond *et. al.*.(2018). The result shows that 95.00% of the respondents practice home garden to get better nutrition and generate more income for the family respectively. 90.00% of them have home gardens to obtain fresh food items like vegetables, for recreation (77.50 %), for reduction in family food budget (70.00 %) , for preservation of indigenous knowledge and culture and environmental benefits/beautification (50.00%) respectively, for easing of emotional stress and for medicinal purpose (37.50%) respectively, relief of mental fatigue (32.50 %), promoting social justice and equity(27.50%), for important education or learning opportunities (20.00%) and for empowering women (12.50%) while 10 % of the gardeners identified improved mood; satisfaction and pride and increased self-esteem and courage to do things differently in life as benefits they derived from home gardens. These benefits identified in this study

were closely similar to benefits of home gardens reported by many scholars such as Kelechi et al. (2014), Raymond *et. al.*.(2018) and (Galhena *et.al.,* 2013). Some of the benefits as reported by various authors in their study to support the findings of this study include; as sites to grow and produce food items for family consumption (Galhena *et.al.,* 2013), to build food security and a sustainable food future (Calvet-Mir et al. 2016); supports livelihoods by providing informal sources of income for households (Kumar and Nair 2004); allows for daily physical activity; improves mental health; and facilitates social engagement and human-nature connections (Blake and Cloutier-Fisher 2009). It also strengthens household and community resilience to economic or political change (Buchmann 2009); and promotes social justice and equity outcomes (Patalagsa *et al.,* 2015) Robert and Tim (2004) opined that in many cases, sales of products of home garden significantly improve the family financial status. Home gardens have been outlined as a means of providing for the unemployed and low income in rural communities (Glover, 2004). Home gardens are vehicles for economic emancipation while providing social and recreational benefits for gardeners (Alaimo, Reischi and Allen, 2010). According to Koyenikan (2007), households benefits from home gardens includes increase in household food production, improved health status of the household, income generation and nutrition.

Challenges Faced by Home Gardeners

Table 9 showed that pests attack and diseases infestation (62.50%), poor soil fertility (57.50%) and lack of farm inputs such as seeds, fertilizers, pesticides and farm tools (50.00 %) were the major challenges/problems faced by home gardeners in the study area. Other challenges that can be classified as minor problems are harsh weather condition (42.50%), inadequate water supply(30.00%), poor financing and lack of fencing that are faced by 25.00% of home garden owner respectively while only 10.00 % of the gardeners reported theft as a challenge. The study revealed that majority of the gardeners in the study do not have challenges. Lack of farm inputs, pests and diseases infestation and poor soil fertility observed in this study were reported as challenges to home gardens by various studies as reviewed by Galhena *et.al.*(2013) . For example Fernandes and Nair (1986) reported limited access to agricultural inputs such as seeds, planting material, tools, and capital as a challenge to home gardens.

Table 7: Frequency distribution of the respondents in the study area based on type of crop grown

Crop type	Scientific Name	Frequency	Percentage
Cowpea	Vigna unguilicata	35	87.50
Groundnut	Arachis hypogaea L	33	82.50
Maize	Zea mays	30	75.00
Tomatoes	*Lycapersicon esculentum*	28	70.00
Millet	*Pennisetum glaucum*	26	65.00
Sorghum	Sorghum bicolor	24	60.00
Onion	*Allium sepa*	23	57.50
Pepper	*Capsicum spp.*	20	50.00
Sweet potato	Ipomoea batatas	20	50.00
Cabbage	*Brassica oleraceae*	18	45.00
Okro	*Ablemoschus esculentus*	15	37.50
Pumpkin	*Telfaria occidantalls*	13	32.50
Spinach	*Amaranthnel hybridus*	13	32.50
Bitter leaf	*Vernonia amygdalina*	12	30.00
Moringa	Moringa oleifera	10	25.00
Yam	*Discorea spp.*	10	25.00
Lettuce	*Lactuca sativa*	9	22.50
Mango	Mangifera indica L.	8	20.00
Sugarcane	Saccharum officinarium	8	20.00
Cassava	Manihot esculenta	7	17.50
Water leaf	*Talinum traigulare*	6	15.00
Pigeon pea	Cajanus cajan	6	15.00
Garden egg	*Solanum melongena*	6	15.00
Water melon	*Catrulles lanatus*	4	10.00
Pawpaw	*Carica papaya*	4	10.00
Guava	*Psidcum guajava*	4	10.00
Curry leaf	*Murraya koenigii*	4	10.00
Banana	*Musa spp.*	4	10.00
Lemon grass	*Cymbopogon schoenanthus*	3	7.50
Carrot	*Daucus carota*	3	7.50
Pineapple	*Annona comosus*	3	7.50
Orange	Citrus spp.	2	5.00

Multiple Response.

Source: Field survey 2019

Table 8: Frequency distribution of the respondents in the study area based on benefits and uses of home garden

Benefits	Frequency	Percentage
Recreation(Pleasure/hobby)	31	77.50
Easing of emotional Stress	15	37.50
Relief of mental fatigue	13	32.50
Environmental benefits/beautification	20	50.00
Better nutrition	38	95.00
Easy source of fresh food items	36	90.00
Income generation	38	95.00
Conservation of medicinal plants	15	37.50
Reduction in family food budget	28	70.00
Empowering women	5	12.50
Promoting social justice and equity Preserving indigenous knowledge and culture	11 20	27.50 50.00
Improved mood; satisfaction and pride Increased self-esteem and courage to do things differently in life	4 4	10.00 10.00
Important education or learning opportunities.	8	20.00

Multiple Response.

Source: Field survey 2019

Table 9: Frequency distribution of the respondents in the study area based on challenges faced by home gardeners

Challenges	Frequency	Percentage (%)
Lack of finance	10	25.00
Lack of farm inputs	20	50.00
Pest and diseases	25	62.50
Theft Lack of fencing Harsh weather Poor soil fertility Inadequate water supply	4 10 17 23 12	10.00 25.00 42.50 57.50 30.00

Multiple Response

Source: Field survey 2019.

IV. CONCULSION

From this study it can be concluded that the majority of the home gardeners in the study area derived various benefits from keeping home gardens such as food security, better nutrition, income generation, easy source of fresh food items such as vegetables, as recreational facility, beautification of environment, reduction in fatigue and stress, improvement in health status and reduction in family food budget among other benefits not mentioned. However inadequacy of farm inputs, attack of insect pests and diseases and poor soil fertility were the three major challenges identified among the respondents.. The study therefore, recommends that gardeners should be encouraged to organize cooperative societies so as to pull their resources together to enable them to get enough capital to purchase necessary farm inputs such as farm tools, fertilizers, pesticides, insecticides and fungicides required for home garden which will enable them to control pests and disease attacking their crops.

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