ASSESSMENT OF URBAN AGRICULTURAL PRACTICES IN ABUJA MUNICIPAL AREA COUNCIL (AMAC), NIGERIA

BY

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MSUD/CHSUD/2018/8068

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOLFEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIAIN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF HUMAN SETTLEMENTS AND URBAN DEVELOPMENTS

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ABSTRACT

This study seeks to carry out assessment of urban agriculture in AMAC, Abuja with specific focus on determining the socio-demographic characteristics of the farmers, areas and crops planted, peculiarities of the farm, opportunities, and challenges of urban agriculture in Abuja. The study design is a cross-sectional study design with consecutive sampling method and 134 sample size was used. Data was analyzed using SPSS with univariate, bivariate and multivariate analysis conducted. Majority of the farm owners are male while other are females with ratio of 7:3. The farm owners are majorly within the ages of 46-55 years; oldest age group is 56 and above. Most of the farm owners are married, only few of them are single. Most of the farm owners are not educated and some of them have secondary or primary education. Majority of them are married and mostly have 4-6 persons in their households. Most of their income per harvest falls between ₦201,000-₦300,000, most of the respondents lease their lands for farming activities. The farmer owners' educational level and Income per month have strong relationship with the revenue/profit margin of the farm. However, those with secondary education, non-formal education and those that earn between ₦301,000-₦400,000 have higher likelihood of high revenue/profit margin. Those that earn between ₦101,000 -₦200,000 have less likelihood to have high revenue/profit margin. Location of farm has strong relationship with revenue/profit margin of the farm in AMAC, Abuja. However, those that are based in Apo and Karu have higher likelihood of generating higher revenue/profit margin. Time of harvest, degree of participation, farming method, water system, customers mean of getting farm produce and source of capital are the peculiarities of urban farming in AMAC, Abuja. Security challenge have been exceedingly rare among the farmers, its only few that have witnessed such, the security in urban center is quite tight. Encroachment of farms is rare, only few farms have such experienced. Many of the farmers claimed the market is not so accessible. Security challenge, access to loan, grants and subvention and customers patronage are the challenges and opportunities of urban agriculture in AMAC, Abuja. However, those that have witnessed security challenge are less likely to have high revenue/profit margin, those that have access to loan, grants, and subvention, and those that have high customer patronage have higher likelihood to have high revenue/profit margin.

TABLE OF CONTENTS

CHAPTER TWO

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of Study

Municipalities remain leading institutions that are charged with services provision to citizens living in urban areas. The activities of a municipality are mostly determined by proper regulation via urban planning and mapping. Municipal governments must be able to successfully use spatial information, mobilize data intensely, and communicate the data they produce with the general public to achieve their commitments. The practice around the house or on plots in urban or peri-urban regions is referred to as urban agriculture. As a result, it's difficult to depict with reliable data and trends in most cases because it is an informal activity (Ruel et al. 1998; FAO 2003). In addition to some particular crops, urban agriculture includes vegetable and cultivation of fruit tree, forestry, livestock production in small-scale (ranging from usual practice, such as cattle and poultry, to local species, such as Guinea pigs), beekeeping, and aquaculture (combined fish and plant culture) (Drescher and Iaquinta 1999; Mougeot 1994; FAO 2001; Ghosh 2004).

The arrival of migrants from rural areas in pursuit of economic prosperity as well as increasing population in the cities has led to speedy urban population growth in many cities of the world leading to congestion and deteriorating quality of life (Adedayo and Tunde, 2012). Africans are migrating to urban areas. The continent, which already has the world's newest and fastest-growing population, is experiencing unprecedented levels of urbanization. By 2050, Africa's 1.1 billion inhabitants will have doubled in number, with cities, particularly slums, accounting for more than 80% of the expansion (Robert and Katie, 2018). The ramifications of this rapid expansion are difficult to measure. Imagine how, between now and 2030, Lagos, Africa's largest city, is anticipated to increase at a rate of 77 people every hour (Robert Muggah, Katie Hill, World Economic

forum 2018). This process is usually accompanied by poverty and hunger because it places huge demands on the urban food supply system. With these two burgeoning numbers, the task of satisfying their hunger with food supply from only the rural area will be impossible. This urban mass exodus is exacerbated by migrants of able-bodied men and youth leaving the disadvantaged groups (women, children, elderly, retired and people terminally ill) in the rural areas to perform agricultural operations with simple implements which cannot sustain their subsistence production let alone for supply to the cities (Adedayo and Tunde, 2012). Hence, the need to increase food production in urban space to meet up urban food requirements.

Despite a growing understanding of its importance in respect of sustainable food production and poverty reduction for urban people, urban and peri-urban agriculture (UPA) is mostly an unstructured industry without incorporation of urban planning or agricultural policies. This renders it fragile and puts its long-term sustainability in jeopardy. Urban and peri-urban agriculture contributes to local economic growth, reducing poverty, social inclusion of the urban poor, particularly women, city greening, and trash repurposing (FAO, 2008).

As a result of urbanization, UPA has grown from a simple, customary, and also informal profession to a marketable and skilled enterprise. UPA has become an important part of food security strategies. It was recognized for the first time at the FAO-Committee on Agriculture 15th session held in Rome (1999), and then again at the World Food Summit (2002).

Urban and peri-urban agriculture is a branch of the agricultural industry that grows, advances, processes, and distributes a variety of agricultural products inside (within-city) or on the outskirts (peri-urban) of a town and city, primarily through the use of human

efforts, land, and water endowment, as well as products and services available with the ambient urban setting (Mougeout, 2000).

In several ways, food security, nutrition, and livelihoods are all aided by UPA:

i. Delivering for family self-consumption, which contributes to a balanced diet and allows for food cost savings.
ii. Selling excess or dedicated and intensified commercially focused production systems as a source of income.
iii. Increasing the availability of fresh, micronutrient-rich foods in local marketplaces at affordable costs.
iv. Topography management and the use of agroforestry systems, hedgerows, and woodlots to preserve the tree canopy (FAO, 2008).

In metropolitan places, access to food is highly dependent on one's ability to earn money. Governments should acknowledge the value of UPA and street food in providing food to impoverished urban households and bringing cash for women in this area. Women are drawn to small-scale UPA activities because they may be done part-time while juggling other duties like home and child care (FAO, 2008).

In Nigeria, many cities and towns sprouted out of farming and fishing neighborhoods where agriculture had in the past been the major occupation of the populaces (Ezedinma and Chukuezi, 1999). This contributed largely to economic development and food security in Nigeria. In the 1960s, the agricultural sector employed over 80per cent of the working population and contributed significantly to Gross National Product (GNP) in Nigeria (Adedayo and Tunde, 2012). However, since the ’70s, the oil sector displaced agriculture while abled men and youths travelled to the cities in search of better economic

prospects leaving the underprivileged groups to produce food for the nation. Recent studies have shown that UA in Nigerian cities has become more widespread after the structural Adjustment of the economy in the 1980s (Kareem and Raheem, 2012). Many urban dwellers were compelled to engage in Urban Agriculture due to increases in food prices, unemployment, and inflation.

1.2 Problem Statement

The importance of urban agriculture (UA) is continuously expanding as the issue of urban food security becomes increasingly prominent around the world. Localized agriculture has always been the domain of communities, led and pushed by competent and dedicated individuals who farmed food to feed their communities. Moreover, localized agriculture has worked without major problems. Hence it is pertinent to carry out a holistic assessment of Urban Agricultural practices to aid the policy development strategy of the municipality.

Proximity to marketplaces, strong rivalry for land, restricted area, Urban agriculture is characterized by the utilization of resources such as wastewater and organic solid wastes, largely ephemeral goods, low farmer organization, and high specialization. However, the assessment work would enable the municipalities to determine and forecast the important needs of the citizens in terms of infrastructure and agricultural input for an anticipated population surge.

Urban agriculture, has both merit and demerit impact on social, environmental, and economic externalities just like other urban activities. Externalities are alterations in the material or social setting caused by urban farming that extend outside the productive system's boundaries, like in this case (Fleury and Ba, 2005).

Argentina, Brazil and Cuba (Zero Hunger Campaign) which sustainable development goal 2 are popular examples of nations that provide significant government aids for agriculture development in urban area. Nations such as Benin, Zambia, Botswana, and China are considering policies to help urban agriculture, sometimes as part of a larger strategy (e.g., Food Security Policy, Poverty Reduction Strategy, Sustainable City Development Policy or Irrigation Policy).

The assessment of urban agricultural practices will not only pave the way for future development but also position the municipal for prompt responses to eventuality or outbreaks that could affect agricultural output.

It is, therefore, necessary and important to embark on a documented research study and assessment of urban and agricultural practices in AMAC, Abuja, to generate facts and data for policy development, evaluation and control for sustainable urban agricultural practices in AMAC, Abuja.

1.3 Research Questions

1. What are the socio-demographic characteristics of farmers related to the performance of urban agriculture in AMAC, Abuja?
2. What are the areas and the crops related to the performance of urban agriculture in AMAC, Abuja?
3. What are the peculiarities of urban agriculture-related to the performance of urban agriculture in AMAC, Abuja?
4. What are the challenges and opportunities related to the performance of urban agriculture in AMAC, Abuja?

1.4 Aim and Objectives

1.4.1 Aim of the study

The study aim to carry out an assessment of urban agriculture in AMAC Abuja.

1.4.2 Objectives of the study includes:

1. Determine the socio-demographic characteristics of farmers related to the performance of urban agriculture in AMAC, Abuja.
2. Determine the crops performance in the study area.
3. Determine the peculiarities of urban agriculture related to the performance of urban agriculture in AMAC, Abuja
4. Determine the challenges and opportunities related to the performance of urban agriculture in AMAC, Abuja.

1.5 Scope of the Research

The research focused on the urban aspect of city farming which includes fruits, spices and vegetables cultivation within AMAC, assessing its existing condition and checking for its potentials for sustainable future practice and benefits. The study would be conducted in six selected districts under AMAC; Gwarimpa, Maitama, Wuse, Karu, Apo and Garki district respectively.

Abuja Municipal Area Council (AMAC) being one of the well planned and articulated area council in Abuja and the entire country is endowed with urban features that stand it as a typical geographical set for this assessment. These features include uniform agricultural practices, infrastructures, notable agricultural settlements among others.

1.6 Justification of the Study

Urban Agriculture Development is an alternative plan to enhance the income of the urban poor, which is a larger percentage of urban dwellers. However, this veritable tool has been neglected by policymakers and the government of the day, this is due to a lack of insight

and facts that convince the necessity, which could be provided through a purpose-driven assessment that targets the required sector. This study will provide figurative incite and magnitude of urban Agriculture, thereby justifying the necessity for urban agricultural practice in AMAC as a case study.

The policy maker can also make use of the result of the study to promulgate necessary policy to effect change. The beneficiaries of this study will include the social researchers, policy makers and other Agricultural entrepreneurs. This study is an assessment that targets the Agricultural sector for urban development.

AMAC is a municipal area council out of the five (5) of its kind in Abuja. The effect of replicating the case of AMAC in other municipal area Council and the Country at large cannot be ascertained or confirm by this study.

1.7 The Research Area

The Nigerian Federal Capital Territory, Abuja is the subject of the investigation. It is located between latitude 9,000 North, longitude 6,000 East, and latitude 14,080 North, longitude 7,580 East. It covers a total area of 713 km2 (71.300 acres) and has a population of approximately 6 million people in the metropolitan region as of 2016 (https://wikipedia.org/wiki/Abuja).

When the decision was made in 1976 to relocate the national capital from Lagos, a new capital area near the country's centre was chosen. Construction began in the mid-1970s, but the metropolis of Abuja earliest phases was not completed until the late 1980s due to economic and political turmoil. On December 12, 1991, Nigeria's capital city, Abuja, was named.

1.7.1 Ecological zone

Abuja falls within the savannah zone vegetation of the West African sub-region. Every year, it experiences three (3) weather conditions. They include a warm temperature of the daytime reaching 28-30^{0}c which sometimes gets to as high as 40^{0}c and nighttime temperatures which sometimes get to as high as 40^{0}c and nighttime temperatures of about 22-23^{0}c, which can decrease to 15^{0}c, resulting in chilly evenings (Wikipedia 2007).

With yearly rainfall ranging from 1100 to 1600 mm, the wet season is hot and humid. Between the temperature and rainfall, there is a brief period of wind, marked by dust haze, increased coolness, and dryness, and characterized by the North East trade wind.

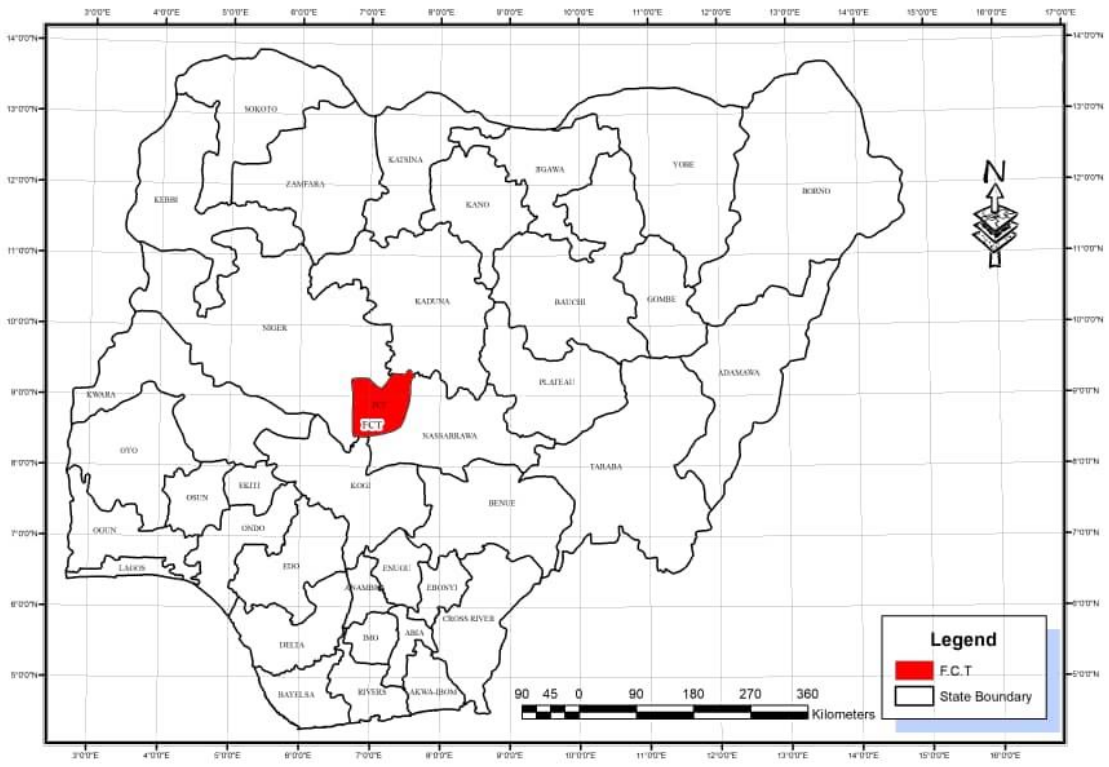

Figure 1.1: Map showing Federal Capital Territory Abuja

Source: Modified by author, 2021

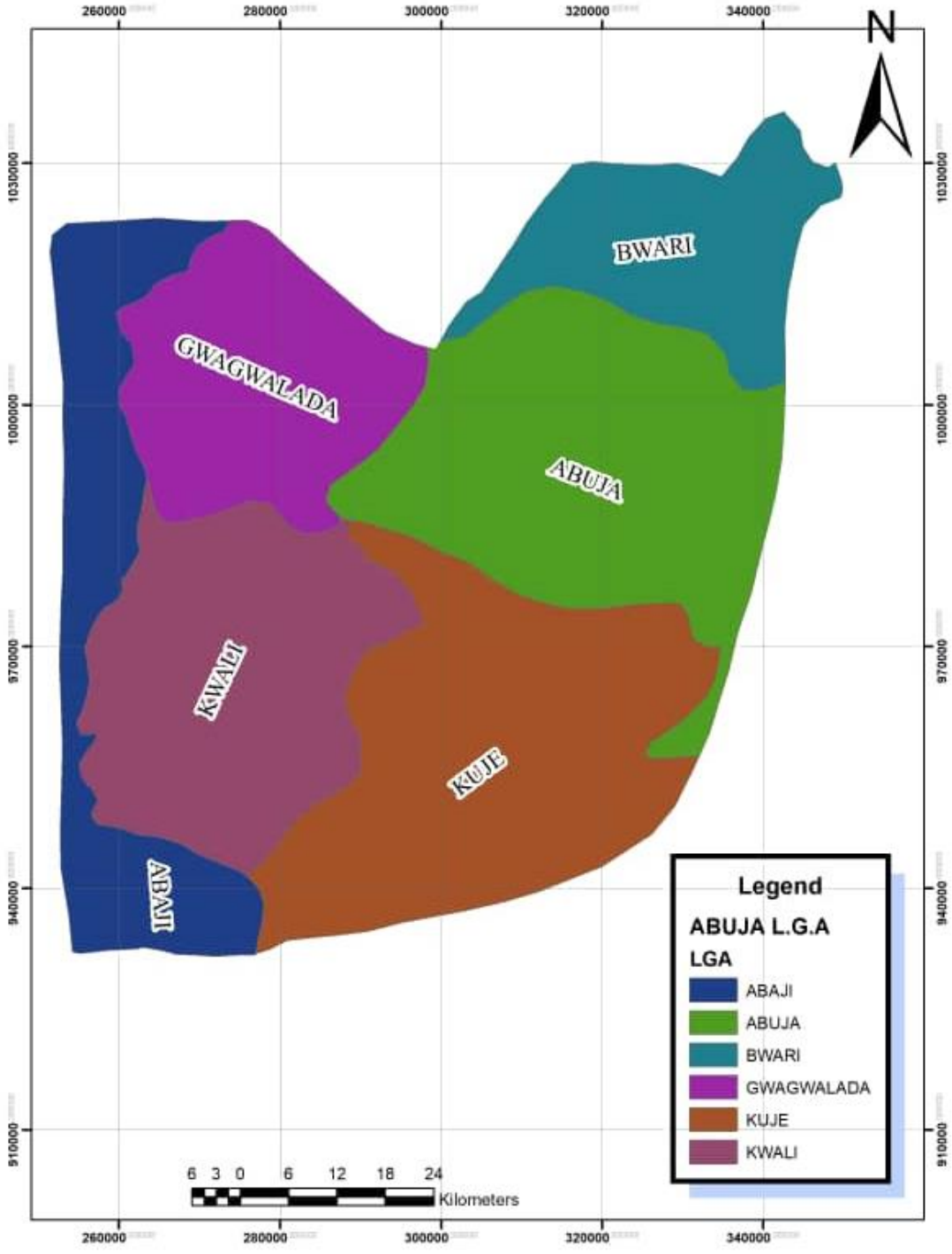

Figure 1.2: Map showing Abuja Area Councils

Source: Modified by author, 2021

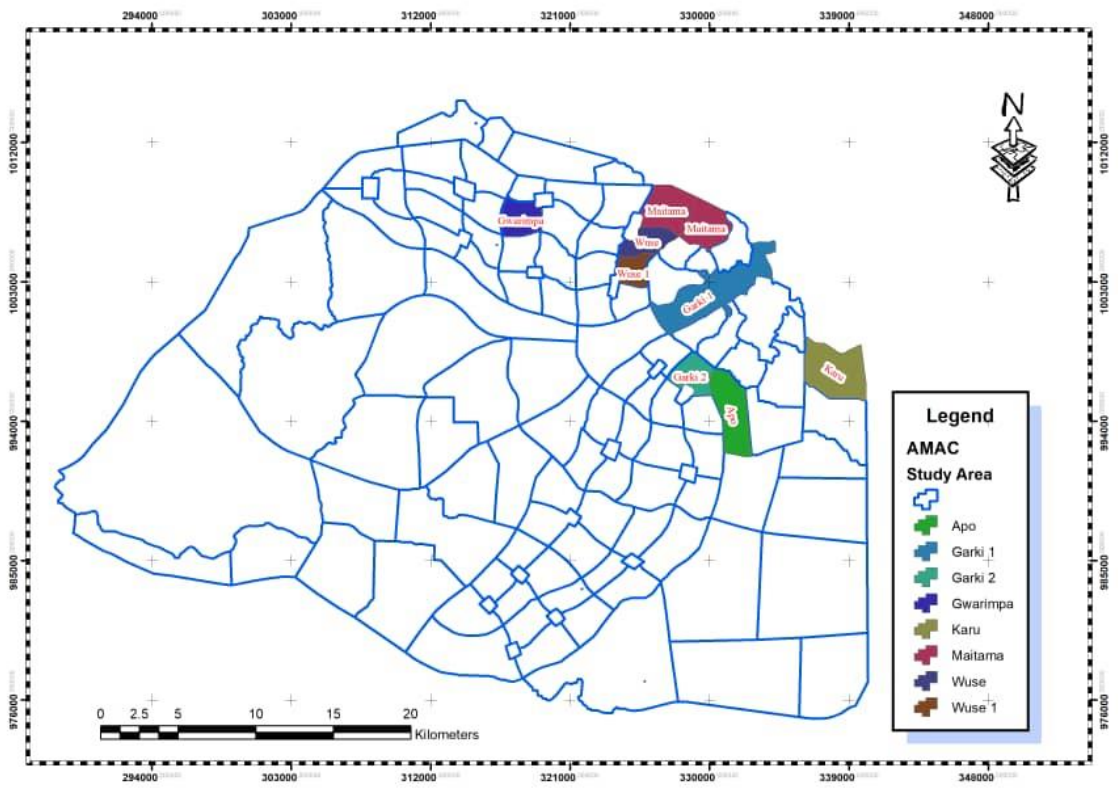

Figure 1.3: Map showing Study Area
Source: Modified by author, 2021

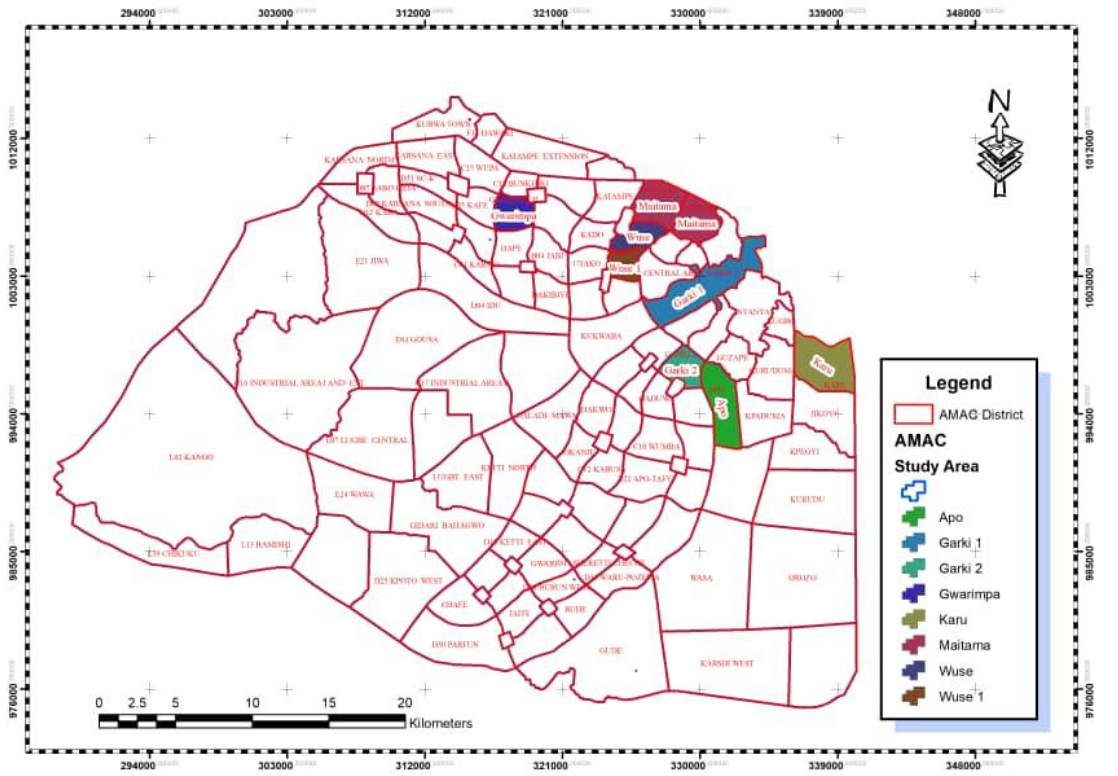

Figure 1.4: Map showing Districts under AMAC
Source: Modified by author, 2021

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Urban Agriculture

In recent years, urban agriculture appears to have gained importance, particularly in developing economies, because it has been discovered to be a viable intervention strategy for the urban poor to earn additional income. Consequently, urban forms can help to revitalize urban land that has been abandoned or underutilized, thus provide social and economic advantages to urban populations and positive effects on the urban landscape (US EPA, 2020).

Urban agriculture is not the same as rural agriculture in terms of concept, but it is complementary to it; It is connected with the economic and ecological systems of the area. The word was first used by researchers and the media, but it has been embraced by global organizations such as the United Nations Development Programme (UNDP) (Smit *et al.,* 1996) and FAO (FAO, 1996; COAG/FAO 1999).

According to Smit *et a*l. (1996), an estimated 800 million individuals worldwide are involved in urban agriculture; of these, 200 million are market producers, employing 150 million people full-time. UA produces goods worth millions of dollars in main Least Developed Countries (LDC) city centres year after year, despite little funding and significant losses (Mougeout, 2000).

It remains an essential source of supply in urban food systems, but it is only one of several home food security options. Around 200 million city inhabitants participate in urban farming, according to the most frequently recognized estimate (Nelson 1996). Similarly, it is one of the various strategies for more successfully managing freshwater resources,

cleaning and/or regaining urban solid and liquid wastes, conserving or producing revenue and employment, and making beneficial use of urban open areas.

In cities, the largest portion of food is purchased, and poor people can spend up to 60 per cent to 80per cent of their earnings on feeding (Tabatabai 1993, Maxwell et al., 1999). The capacity to raise money is a critical predictor of poverty reduction, and possibly the most significant difficulty faced by city inhabitants is that, most of them work in sectors with low salaries, hazardous working conditions, and unstable job duration. In urban sub-Sahara Africa, less than 10 % of total employment are in the sector of regular wages payment.

Most governments are waking up to one indisputable and growing trend, but they need to do more to address its far-reaching economic, social, and political implications: poverty and malnutrition are becoming more urbanized. More rural poor people are migrating to cities, more city inhabitants are born into poor households, and more urban average-class individuals are circling the poverty pattern. If at least 25 per cent of the developing world's absolute poor lived in cities in 1988, they are anticipated to account for 65 per cent of the world's poor families by 2020. (UNICEF 1993).

The situation in Nigeria is not much better, as the accepted socio-economic profile suggests that over 70% of Nigerians are poor. The high rate of urbanization has eroded purchasing power, increased poverty, retrenchments in the public and private sectors, and a high unemployment rate, limiting the ability of both the urban poor and middle class to purchase all of the food they require. This is because most Nigerian households spend between 50 and 80 per cent of realized income on food (NBS, 2006).

With the obvious facts about the presence and potential of UA in Nigeria, particularly in major cities such as Abuja, Lagos, Kano, and Ibadan, policymakers and the government have deliberately ignored a veritable sector and have not made concerted efforts to acknowledge and channel attention to it.

2.2 Conceptual Definitions

Abubakar (2001) stated that "urban agriculture comprises of home-based horticulture, propagation of nutritional and non-nutritional product (decorative plant), rearing of water-based organisms, cattle and growing of economic trees are all included in city farming". The chief purpose of practicing city farming is for food production (for individual consumption or sales) and or greater revenue. For a broader description of urban agriculture, it is essential to take into consideration the dynamics that impact urban agriculture. These elements include location and scale, activities, motivation and stakeholders (Nwose and Adeshina, 2013).

Some terms are used interchangeably with urban agriculture, (Recommendations for the City of Kamloops, 2007), urban agriculture thus comprises, but is not restricted to these undertakings as long as they are practised inside or nearby city confines:

i. Allotment gardens
ii. Backyard gardens
iii. Beehives
iv. Berry patches
v. Community gardens
vi. Community Supported Agriculture (CSA)
vii. Container gardens
viii. Edible landscapes (landscaping that incorporates food-producing plants)
ix. Greenbelt agriculture

x. Greenhouse agriculture

xi. Hedgerows consisting of edible plants

xii. Herb gardens (culinary and medical)

xiii. Kitchen gardens

xiv. Metro Farms

xv. Micro-livestock

xvi. Orchards

xvii. Prison farms

xviii. Rooftop gardens

xix. Schoolyard gardens

xx. Trellis/fence farms

xxi. Vegetable gardens

xxii. Vertical agriculture and

xxiii. Vineyards

2.3 Conceptual Issues

Although there are no succinct definitions of UA, it is commonly agreed that efforts to define it should be purposeful to present it a specific substance and form, Egbuna (2017).

Mougeot (1996) insists that UA definitions should uphold the critical trait that defines UA as urban, notably that it is integrated into the local urban economic and ecological system, and emphasizes that the concept will be useless on the policy fronts, scientific and technological except this dimension is improved and made operational.

Stevenson *et al.* (1996), on the other hand, focus on the difference between peri urban agriculture and agriculture in the peri urban zone. Economic activities, food/non-food product categories and subcategories, intraurban and peri urban character of the location,

types of areas where it is practised, types of production systems, product destination, and production scales are some of the more common conceptual building blocks of UA identified.

For example, locale in (within) and near cities or urban regions is the most common element in examined definitions in literature (Ganapathi 1983, Sawio 1993, Smit et al. 1996b, COAD/FAO 1999). The majority of UA field investigations took place in extensive urban centres, national capitals, or secondary cities, therefore only a few may be assumed to have focused on agriculture in rural areas that are ‘fundamental' of respective countries. However, few differentiate between intra and peri urban locations. Those which did use as criteria for intraurban agriculture, population sizes, density thresholds, official city limits (Gumbo & Ndiripo 1996, Murray 1997), municipal boundaries of the city (Maxwell & ArmarKlemesu 1998), agricultural use of land zoned for other use (Mbiba 1994), and agriculture within the legal and regulatory purview of urban authorities (Aldington 1997).

In view comparison between urban and rural agriculture, Moustier (1998), defined UA as agriculture that is executed within or on the outskirts of a city where a non-agricultural use of local resources is a real option; rural agriculture is found in areas where this option is not an issue. In the Agri-Congo study of (open space) market, vegetable farming in Brazzaville for example gardens within the city limit are known as ‘intraurban’ whereas that off-limit is called ‘periurban’ (Moustier, 1999).

UA’s are imagined in a usual framework of building blocks model (see Figure 1) that includes the following components:

Modes of economical activities;

i. Food/non-food categories of products and subcategories;

ii. The intraurban and peri urban character of location;

iii. Areas where it is practised;

iv. Production systems;

v. The product endusers;

vi. Scales of production.

Conceptual framework

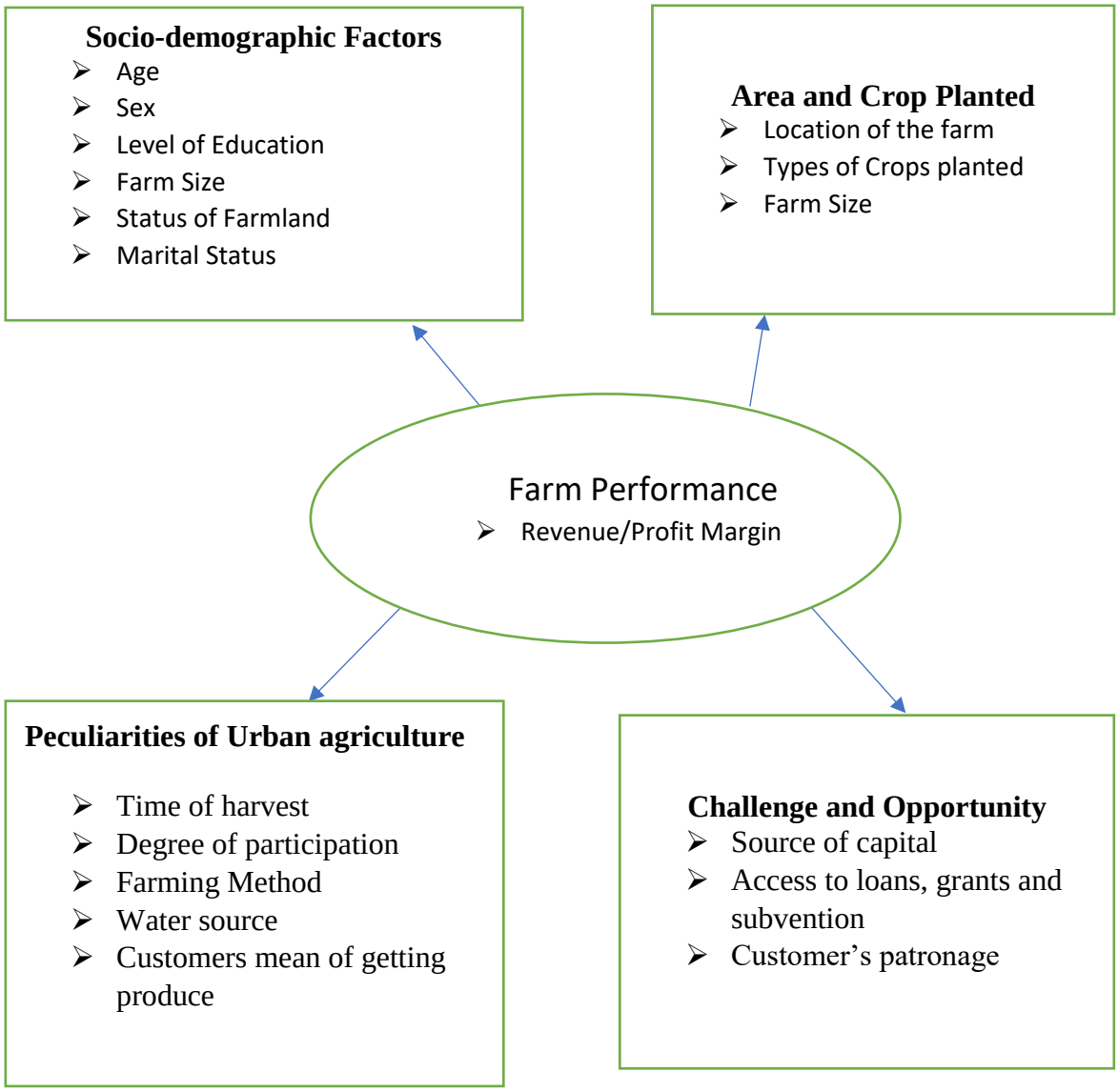

Figure 2.1: Urban Agriculture: Common Dimensions
Source: Adopted from Urban Agriculture: Definition, Presence and Potentials and Risks, Mougeot L. J. A. (2000).

The majority of definitions focus on agriculture's production phase; more recent definitions include processing and trading as well as discussions among them.

Fig. 2.1 explains the conceptual framework as it involves social demographic factors, Area and Crops planted, peculiarities of urban agriculture, challenges and opportunities. All these frameworks could be enhanced by farm performance.

Under the **food/nonfood categories and subcategories,** the definitions embrace very many agricultural productions but laid more emphasis on food productions fit for consumption by either people or livestock; then, mostly cultivated food crops (grains, root, vegetable, aromatic and medicinal herbs and fruit crops and live stocks). A few deals with other plants such as ornamental and agro-industrial (e.g., silkworms, tobacco). In food crops, definitions stress the more perishable and relatively high valued vegetables and animal products and by-products. Some studies focus food production exclusively, while others encompass both food and non-food production. But to exclude the nonfood group from the general UA concept would truncate our understanding of the UA system at large (Luc J.A, Mougeot, 2000).

The most consistent factor in the different meanings of UA that is ‘in and around cities or urban regions' is the character of a locality. The majority of UA studies were conducted in metropolitan places such as national capitals; therefore few are likely to have dealt with agriculture in rural areas that are ‘fundamental' of the various countries (Luc J.A, Mougeot, 2000).

The kind of area where UA is practised is another criterion. Such areas vary from author to author: location respective to residence (on–plot or off plot), development status of site (built-up vs. open space), modality of tenure/usufruct of the site (cession, lease, sharing, authorized or unauthorized-through personal agreement, customary law or commercial

transaction; the official land use category of the sector where UA is practised (residential, industrial, institutional, etc.) some authors have focused on home plot areas (Lee-Smit *et al.,* 1987, Regis 1999), others have aimed their studies at off plot and open spaces locations (Freeman 1991, Mbiba 1994, Kiango & Likoko 1996, Dennery 1996, del Rosario 1999).

On the other hand, product destinations/endusers are another dimension of definitions. Most definitions embrace agricultural production for both self-consumption and some trade (sale, barter, gifts, etc.) both destinations are usually found to be targeted to varying degrees by producers or households studied. Economic research recently has been aimed at certain (export) market-oriented production and has assist us to better understand the economic performance of Urban Agriculture and advantages comparatively over other supply sources, both at the producer and consumer level. On the self-consumption level, comparatively more care should be focus on the contribution to the economics of animal assets and the fungibility of supplemental food self-consumption afforded by Urban Agriculture to households. Whereas in Accra for example little attention was paid to assets value of small livestock, a study in Cairo, a city thrice as densely populated as Accra and with only 3 per cent of its precipitation, shows that nearly 30% of low-income households in informal housing had livestock worth on average nearly a full month of income (GTZ, 1999).

Another degree of definition is production systems. A priori, few definitions specifically include or exclude specific types of production systems. Most surveys gather information on the various types of systems found in the areas under investigation. Individual/family micro, small, and medium businesses have received the majority of research attention, as opposed to huge, national, or international enterprises. Recent studies, however,

demonstrate that larger units interact with smaller market-oriented units in multiple ways, usually at the expense of units solely dedicated to self-consumption (peri-urban areas). Corporate outsourcing has been used in Urban Agriculture for a long time, especially in Asian cities, but trade liberalization is making it more appealing in a rising variety of forms of production and cities in Africa and Latin America (Luc J.A, Mougeot, 2000).

2.4 Urban Agricultural Practices Globally

City farming have been existing right from the earliest formation of cities, every so often surfacing as an essential alternative aimed at enhancing nutritional safety in addition to assisting the incomes of city inhabitants. All through the past as well as about the globe, urban agriculture appeared on several diverse systems based on the type of weather, existing know-how, and traditional inclinations (Ericksen, 2008; Mougeot, 2006). For a very long time, home gardens remained worked on in the municipalities of emerging nations to serve as a source of food for city inhabitants using multi-story arrangements of foliage, undergrowth, and flowering offshoots (East and Dawes, 2009; Kumar and Nair, 2004). Eichemberg *et al.* (2009), observed that these specialized forest growing schemes maintain great stages of biodiversity as well as make available a huge quantity of yields.

All through the Middle Ages, kitchen gardens were prevalent all over Europe because of the cultivation of fruits, vegetables, therapeutic additives, as well as cut vegetation mainly belonging to the inhabitants of such families (O'Brien, 2001). Macho Picchu is a depiction of a 16^{th} epoch municipality built substantially to assist in the production of food, together with important substructures such as walkways and irrigation channels, including controlling structures meant for leftovers, environmental regulators and foodstuff storing (Smith, 2002).

Mougeot (2005;2006), and Redwood (2009), are recognized by stating that, all around the world, urban agriculture structures progressed to address the necessities of inhabitants in modern metropolises. A lot of particular instances remained recorded, typically in emerging areas like Latin America, South Asia and Sub-Sahara Africa. Parrot *et al.* (2009), observed that in such areas, the emphasis is frequently on enhancing the livelihood of the deprived in metropolitan regions by way of proving nourishment intended for intake, Foeken and Owuor (2008); as expanding actions aimed at creating earnings, and Kumar and Nair (2004), & Madaleno (2000), for empowering women.

Urban agriculture serves as an actual approach aimed at countering an emergency. Havana, Cuba serves as one of the most remarkable instances of the practice of urban agriculture recently, after the downfall of the Soviet Union, which brought an end to the widespread commerce among the nations (Viljeon and Bohn, 2009).

Havana witnessed on regular 38per cent advancement in city farming per annum from 1997 to 2003, which led to a 13-time upturn in the cultivation of vegetables during the 8 years. The majority of the cultivation occurred in “organoponicos”, this refers to the elevated beds with a mixture of topsoil and biological substances that can be erected on virtually any piece of acreage. These days, a considerable amount of the obtainable acreage has been converted for urban agriculture, totaling more than 35000 H inside the limits of Havana (together with city borders as well as close rustic zones) (Koont, 2009).

A large number of metropolises in industrialized nations recognize the widespread advantages of urban agriculture, preparation or procedure strategies adopted to sustain foodstuff cultivation inside the urban limits, together with a robust insistence on the communal purposes delivered by urban agriculture. Montreal possesses a highly dispersed urban agriculture structure within the 97 public parks that make available 8200

distinct acres. Such allotment areas have been renowned for their offerings to communal socializing, enabling of persons and increasing practical understanding (Reid, 2009).

Multi-functional urban agriculture is a novel movement for cultivating foodstuff in Beijing, and as a result, biological expanded farmhouses Girardet (2005), extensive greenhouses have emerged throughout the city (Zhang, Cai and Liu, 2009; Girardet,2005). In China, Shangai is deliberated to be the municipality where urban agriculture has its origin, a lot of useful plots are reserved for the particular reason of cultivating foodstuff (Zhang *et al.,* 2009). Urban agriculture undertakings inside the metropolis source 60 per cent of the vegetables and 90 per cent of the eggs ingested by the inhabitants (Bhatt and Farrah, 2009).

The Terrassa metropolis of the Municipal Area of Barcelona comprises above 1200 allotment acres encompassing 0.65% of the acreage zone. Even though a lot of these locations are unlawfully used, they provide an enormous fraction of the domestic vegetable requirements for the growers (Domene and Sauri, 2007), In Holland, about 250000 communal as well as plot parks are present across 4000 H of acreage, in addition, Amsterdam on its own holds 350H of acreage used for city botanical grounds (Van Leeuwen *et al.,* 2010).

The account of city farming goes back further than a century ago in the U.S. During the 1890s, communal botanical gardens began coming into being on empty plots in metropolises like Philadelphia, New York, and Detriot to make available foodstuff meant for the immediate inhabitants, At the time of the depression (the 1930s), a portion of the urban inhabitants handled the mounting challenges through growing required foodstuff in city allotments gardens in addition to acquiring occupation through the employment generated on the urban farmhouses. Different matters arose during the 1940s, which

included the second world war as well as the consequence portioning of foodstuff. This situation made victory botanical gardens (as well as courtyard botanical gardens plus plots and communal lands) to be encouraged by the central administration and other community organizations. By the 1970s, various novel public botanical gardens sprang up to encourage the revitalization of city zones providing nutritional, measures, as well as collective profit to aid rejuvenate societies. Subsequently, the city farming programme records steady expansion in a lot of metropolises, frequently starting in the form of modest popular initiatives originating from different neighborhoods which progress into greater, harmonized programmes (Lawson, 2005).

Enter a substantial amount of the consideration is shown city farming in the U.S currency centres on prospects towards advancing nutritional safety, before contact a healthy, traditionally suitable diet (Brown and carter, 2003). Many U.S. metropolises processed widespread that is called “food desert”, not necessarily because of the comprehensive absence of existing diet, nonetheless because the markets store simply packaged foodstuffs as well as lack garden-fresh fruit and vegetables. Moreover, with the availability of garden-fresh fruit stuff, a lot of persons existing in deprivation find it difficult to pay the unaffordable rates of garden-fresh in place of packaged foodstuffs. Urban agriculture is seen as a prospect aimed at persons towards acquiring contact with a healthy diet in addition to partaking in the procedure of cultivation individually (Brown and Carter, 2009).

Alongside nutritional safety more enabler of urban agriculture happens to be the rising attention for a generalized nutrient structure in addition to the associated prospect towards improving the sustainability of the structure by means waste reprocessing, stormwater control and recycle, reduced energy wants for food conveyance in addition to storing as

well as other benefits (Redwood, 2009). Brown and Carter (2003), are of the view that, the practice of urban agriculture in the U.S. experiences expansion and enrichment due to the arrivals of settlers to the U.S. from other countries.

2.5 Urban Agricultural Practices in Africa

Urban agriculture in East Africa can be described to be "the act of cultivating food items as well as fruits, the rearing of animals, bees, snakes, poultry, crocodiles, fish, guinea pigs, rabbits, cane rats, or various organisms presumed to be palatable traditionally. Previous research carried out in the four capitals namely; Addis Ababa, Dar Es Salaam, Nairobi and Kampala, it was acknowledged that city farming thrived within stream vales, deluge grasslands, precipices, excavations, community plot beside highway plus railway lines as well as beneath high-tension pillars behind acreage courtyard botanical gardens in addition to plants opposite households. It also insists on the necessity for indigenous establishments to devise more ground-breaking measures aimed at better contact with acreage, harvest safety and loans. They also point out the need for suitable know/for urban agriculture, the aforementioned impact to the city environment in addition to the economy, dense and fluid recovery, threats as well as sexual 'category equity characteristics (Egziabher *et al.*, 1994).

Research on urban agriculture, nutriment, occupations as well as maintainable metropolises in Africa, emphasized the undertakings of agriculture, gardening, animal farming in addition to the growing of forest trees (UNDP, 1999). A close look at vegetable cultivation in fringe zones in the tropical areas acknowledges that urban agriculture is witnessing an upsurge even greater than urbanisation, population growth or even the economy. There seems to be progressive interaction amid urban agriculture as well as the

city underprivileged along with areas surrounding diet, well-being, earnings and sexual role (Richter, 1995).

Comprehensive investigations on urban agriculture practice in Zimbabwe recognized definite characteristics of urban agriculture like sexual role, surroundings as well as established fears plus the chase to tie urban agriculture to wider matters of accommodation providers in addition to the economic foundation of indigenous establishments. Research has brought to light how data concerning urban agriculture is collected, circulated then worked with. It also indicated crucial tests towards the advocates of urban agriculture on if it can be done on its mainly existent form otherwise its commercialized form for its effective impact on the indigenous markets. Investigations came to a conclusion showing urban agriculture could be seen to represent counterproductive action because it interrupts the delivery of sufficient accommodation to the city underprivileged, meanwhile hindering the persons participating in urban agriculture using denying lucrative occupation to them (Mbiba, 1995).

Urban agriculture could assist in achieving better nutritional safety between city inhabitants, a significant discovery on the course of action portrays urban agriculture as a sense in which the city underprivileged adopted as a means of confronting the inability of the recognized economy to make available adequate real income opportunities for their subsistence in the city. It also provides an important or at minimum valuable nutritional enhancement for a lot of city households (Rogerson, 1992).

2.6 Urban Agriculture Practice in Nigeria

Nigeria is primarily an agrarian country, with 70 per cent of its population being inhabitants of rural areas and participate in farming. The urban population makes up the

remaining 30%, and about 26% of the urban population participate in urban agriculture (Ndubuisi, 2002).

Urban agriculture is often practised in places within and around city centres. It is however noticed that in Nigeria's case, urban agriculture is mostly carried out in the fringe zones in addition to scope as well as form impacts, mainly by city influence, agreed city limits, and the distance to the borderlines (Nwose and Adeshina, 2013).

Nigeria's urban outskirt area possesses the following characteristics; cover both rural and urban elements, robust urban effect and requirements, stress-free contact with the market, amenities in addition; to additional contributions, the seeming virtual land scarcity, contamination risk and city development (Adam, 1999).

Most trouble encountered in urban agriculture in Nigeria is caused by the absence of adequate farmland. In cases where it exists, the numerous legal restrictions and the land use act often proves problematic for the urban poor in specific to secure access. Low level of development has also contributed to Nigeria's inability to reach a diverse phase of urban agriculture such as the acquisition of the essential assets, contributions as well as facilities, manufacturing merchandises on large scale; after manufacture, together with handling, enfolding, distribution, selling in addition to recycling (Nwose and Adeshina, 2013).

The majority of Nigeria's low-income farmers have traditionally resided in the metropolis. They can be found in places such as Lagos, Ibadan, Kaduna, Bauchi, Abeokuta, Kano, and others where there is still a large amount of undeveloped urban area and some of the farmers are impoverished (Olakunle, 2003).

Urban farmers in Nigeria are comparatively well-off than the outright poor, also living in cities. A report on recent urban poverty in Nigeria shows that about 63 per cent of urban farmers in Nigeria fit into the very low-income group (Ukadike, 2000). Nwose and Adeshina (2013), observed that women in Nigeria notwithstanding the gender role they perform in the home front are typically engaged in minor scope urban agriculture. However, on a greater urban agriculture scale men are typically involved. They control food and the management of the plots. The cyber farms in Kaduna, Ogba investments in Lagos, are characteristic examples of large-scale urban agriculture.

Nwose and Adeshina (2013) also mentioned that the public sector in Nigeria has no robust impact as regarding urban agriculture. In some towns in the country, urban agriculture remains prohibited. In others where it is practiced, it is abandoned by the government, thereby making the performance small. Administrative backing and preparation meant for the city cultivatares is mostly lacking. Key areas where the government has repeatedly committed billions of naira are in FADAMA 1, 2, 3, project which cannot adequately tackle the difficulty of food scarcity in Nigeria. They also insisted that urban agriculture in Nigeria is frequently a reaction to the urban poverty crisis, a survival strategy due to the difficulty in securing white-collar jobs to become part of the urban population.

2.7 Benefits of Urban Agriculture

Instances abound on the convenience of urban agriculture (Recommendations for the City of Katnloops, 2007) which included:

2.8 Economic Benefits

i. Application of arable decay as manure by city farmhouses in addition to botanical gardens cuts down the decay capacity dumped in garbage lots by as much as 40 per cent.

ii. Communal plots reserved for urban agriculture are looked after by growers and horticulturists, thereby decreasing the cost of maintenance for the urban areas.

iii. Discount in the prices of conveying foodstuff.

iv. Improved inhabitant occupation, such as remodeling design, construction of green roofs, city agriculture, in addition to trading.

v. Putting to productive use of minimally used materials such as the top of roofs, pavements; empty plot, inlets.

vi. As well as the provision of land for the cultivation of food, gardens situated on the top of roofs intensifies rooftop resilience and asset prices, decreases warming/ventilation prices not more than 20per cent Roof The life expectancy of roofs could be elongated using lush protection.

vii. Through marketing city agriculture aids in community regeneration.

viii. From minutes recorded in the World Urban Forum convened in Vancouver, pieces of data show that urban agriculture delivers up to 15per cent of the global nutriment supply (Kamloops food policy council, 2007).

2.8.1 Environmental Benefits

i. Urban area environmental footmarks could be decreased by incorporating city farming into a dual-purpose plot usage policy as well as maintainable transport policies.

ii. Decreased municipal heat island consequence.

iii. Top of roof gardens retaining up to 100 per cent of rainfall, which can reduce surface water overflow as well as reduces inundation demands Hobbs (2002).

iv. Gardens on top of rooftops usually lessen brightness, sound, as well as gale, enthral C02 releases, and support variety in nature, in addition to the adoption of sustainable technologies.

v. Decreased methane discharge originating from manure leftover in dumpsites (UBC Design Centre for Sustainability, 2005).

2.8.2 Health and Social Benefits

i. Improved expectation towards contact with healthy diet aimed at lesser earning persons.

ii. Amplified attention towards the public. Better communal prospects in the form of unrestricted horticulture, training series, grocery shopping at agrarian fairs, plus yield carnivals. Scrutiny in addition to likely wrongdoing hindrance related with communal horticulture.

iii. Enhanced wellbeing through consumption of nearby cultivated foodstuffs.

iv. City farmhouses, as well as botanical gardens, adhere to communal empty land demands in addition to preserving the society's normal legacy.

v. City agriculturalists, as well as horticulturists, could support the protection of communal lands against illegal usage in addition to casual re-planning (Kamloops food policy council, 2007).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This project seeks to conduct an assessment of urban agriculture activities in AMAC Abuja. Also, aimed to use the findings to provide more information about urban agriculture in Urban Centre.

3.2 Research Approach and Design

The research design is a cross-sectional study design, which was used to collect data from urban farmers once and analyzed for detailed findings. Cross-sectional research is a sort of experimental research that examines data from variables gathered at a single point in time across a sample population or a pre-defined subset of the population.

3.3 Study Population

The choice of these study area is as a result of the fact that AMAC is the central and heart of Abuja. The study population was among the urban farmers in Abuja municipal. The study was carried out in Apo, Gwarimpa, Jabi, Karu, Maitama, and Wuse.

3.4 Sample Size Determination

The Cochran formula was used to get the sample size. Cochran formula which takes into consideration the predictable proportion of an attribute with the population: which is valid where **n** is the sample size, $\mathbf{Z^2}$ is the abscissa of the normal curve that cuts off an area at the tails (1 – equals the desired confidence level, e.g., 95%), **e** is the desired level of precision, **p** denotes the population's estimated proportion of a given attribute**.** The value for **Z** is found in statistical tables which contain the area under the normal curve; e is the level of precision (Kasiulevičius *et al.*, 2006). 90% was considered because that is the

actual proportion of the urban farmers in AMAC according to a study by Ngozi E. Egbuna, on Urban Agriculture- A strategy for poverty reduction in Nigeria.

$N = \frac{Z^2 . P.Q}{D^2}$ $N = \frac{1.96^2 X 0.9 X (1-0.9)}{(0.05)^2} = 138$……eq. 1

3.5 Sampling Procedure

Non-Probability sampling called consecutive sampling was used to sample the farmers. The farms and farmers were sampled as they were found. The consecutive sampling method will enable the researcher to sample subjects as they are found.

3.6 Recruitment Activities

The recruitment process includes recognizing qualified participants, adequately explaining the study to potential participants, recruiting an adequate sample based on study goals and design, obtaining informed consent and upholding ethical standards, and keeping participants until the study is finalized. The inclusion criteria urban farmers in AMAC Abuja exclusion criteria are farmers that not into urban agriculture in and outside AMAC Abuja.

3.7 Measurement of Variables

i. Sex is measured by gender (male or female)

ii. Age is measured in years

iii. Marital status was measured by four categories (married, single, divorce and widower).

iv. Level of education considered is: primary, secondary, tertiary, formal and non-formal.

v. Family size: four ranges of family size were used; 1-3, 4-6, 7-9 and 10and above.

vi. Income/harvest was evaluated using five different categories of earning; i. 0-₦50,000, ii. ₦50, 000 - ₦100, 000 iii. ₦101, 000 - ₦200, 000 iv. ₦201, 000 - ₦300, 000 v. ₦301, 000 - ₦400, 000.

vii. Status of farmland: own and lease are the two-variant used to measure the status of farmland.

viii. Location of the farm: six different areas with AMAC were considered in the course of the study.

3.8 Methods of Data Collection

The responders were asked to provide quantitative data. The validity of the questionnaire was determined using a questionnaire by pretesting it, consulting similar research, and discussing with the supervisor. In addition, research assistants were used to guarantee that the study's data was accurate and dependable. Cronbach's alpha, often known as the coefficient alpha, is a method for determining the average of all possible combinations of split-half coefficients resulting from different measuring instrument splitting (Thomas R. Knap, 2015). The SPSS software was used to achieve this. The questionnaire in this study was a variable oriented questionnaire; the questions in the questionnaires are about various study variables.

3.9 Data Analysis

Quantitative data were analyzed using statistical tools called SPSS, Univariate, Bi-variate and multivariate analysis were controlled for. Descriptive data enable the presentation of necessary data in percentage, frequencies etc. The bi-variate analysis permitted the determination of the relationship between two variables; in this case, CHI-Square and P-value were used. The multivariate analysis enabled me to determine the relationship

between different categories of significant variables at the bivariate level, the odds ratio and confidence interval was used here.

3.10 Ethical Considerations

After going through proper proposal processes of the institution and presented the proposal to the research ethics committee of the university satisfactorily, ethical clearance to carry out the study was given. The ethical clearance was presented to the AMAC and agricultural authority of AMAC to seek permission.

To ensure adequate ethical consideration, informed consent was presented in formal writing to the participants to approve their participation in the research, in addition to this, voluntary participation was ensured by assuring them that they have the liberty to participate or not. Anonymity was ensured in the study by avoiding the inscription of the subject names inside the records, coding system was used instead. Confidentiality was ensured by keeping save all the records of the participants and avoid external access to the records. We ensure no harm is done to any participants during the process.

CHAPTER FOUR

4.0 ANALYSIS OF RESULTS

4.1 Introduction

This chapter presents the analysis of the data collected as per the study objective. 132 out of 138 respondents were sampled, resulted to 95.6% response rate.

4.2 Socio-demographic characteristics of the respondent (Farm Owner)

Table 4.1: Showing the sex of farm owner

Sex of farm Owner		Frequency	Percent	Valid Percent
Valid	Male	95	72.0	72.0
	Female	37	28.0	28.0
	Total	132	100.0	100.0

Source: Field survey, 2021

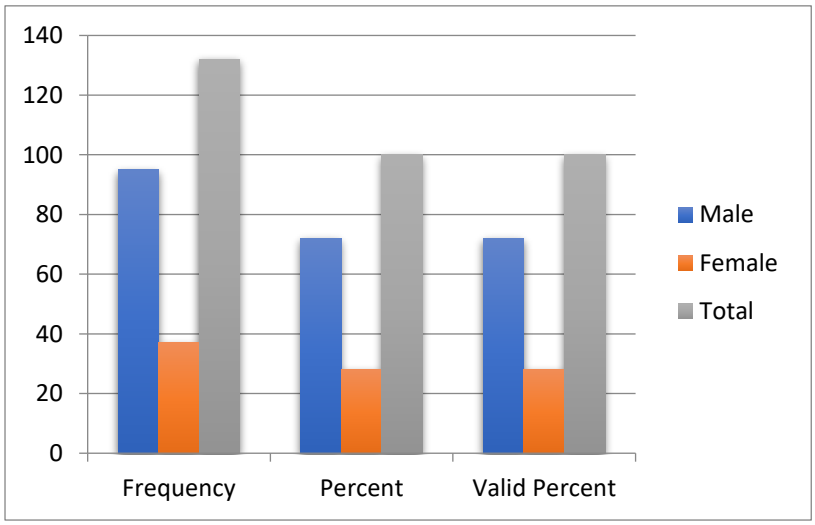

Figure 4.1: Showing the sex of farm owner

Majority of the respondent were male 95(72%) while 37(28%) are females. This might be as a result of the cultural norm in the region where it is believed that farming activities is gender based.

Age of the farm owner

Table 4.2: Showing the age of the farm owner

Age of the farm owner		Frequency	Percent	Valid Percent
Valid	15-25	8	6.1	6.1
	26-35	35	26.5	26.5
	36-45	26	19.7	19.7
	46-55	42	31.8	31.8
	56 and above	21	15.9	15.9
	Total	132	100.0	100.0

Field survey, 2021

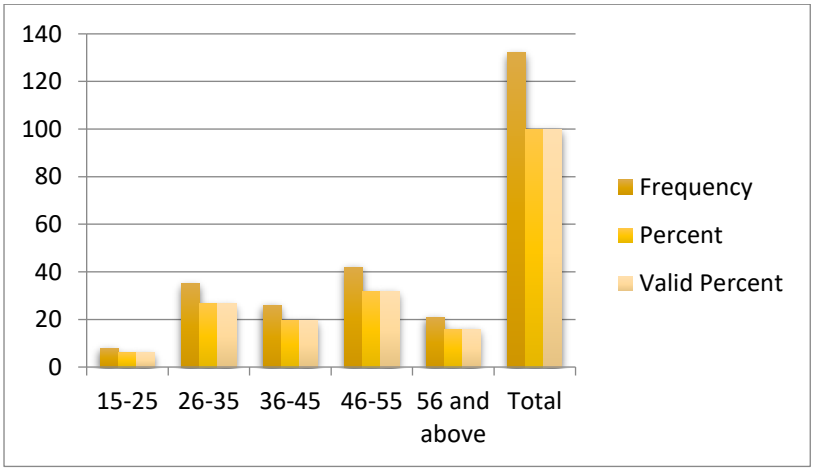

Figure 4.2: Showing the age of the farm owner

The respondents of all ages (15 through to over 60) were represented, with slightly larger numbers in the age bracket 46-55 and 26-35 categories accounting for 42(31.8%) and 35(26.5%) of the respondents, respectively (Table 4.1). The oldest age bracket was 56 and above years which accounted for 21(15.9%) of the respondents. The proportion of ages of males to females was about 72% and 28% in all age groups, indicating that the age demography above youthful age participate more in farming activities.

Marital Status of respondents

Table 4.3: Showing the marital status of the respondents

Marital Status of the respondent		Frequency	Percent	Valid Percent
Valid	Married	115	87.1	90.6
	Single	4	3.0	3.1
	Widowed/widower	8	6.1	6.3
	Total	127	96.2	100.0

Field survey, 2021

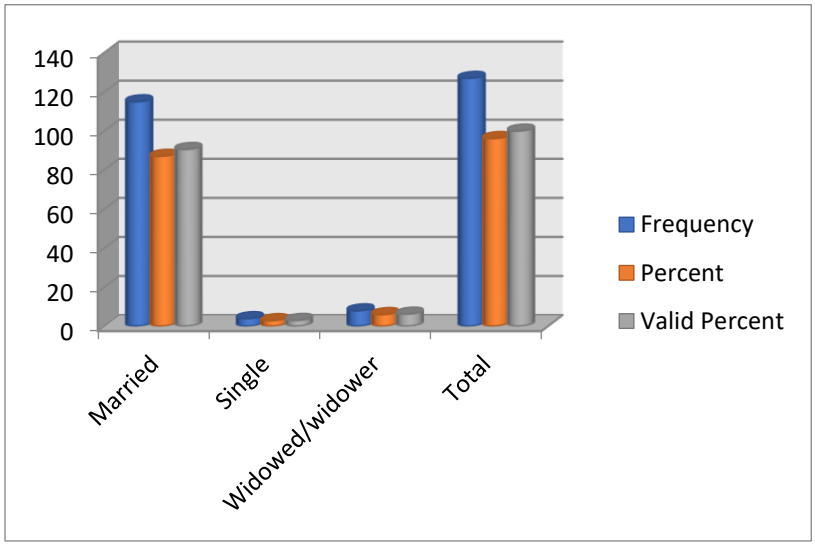

Figure 4.3: Showing marital status of the respondents

This study showed that the majority of the respondents 115(87.1%) were married and living with their spouses, (as shown in fig. 3) A further, 8(6.1%) were widowed, while 4(3%) were single. In a study by Abdulmajeed (2013) reported that married people are more committed to task in agricultural activities than unmarried people.

Educational levels of the respondents

Table 4.4: Showing the educational qualifications of respondents

Level of Education		Frequency	Percent	Valid Percent
Valid	Primary	21	15.9	15.9
	Secondary	21	15.9	15.9
	Tertiary	22	16.7	16.7
	Non-formal	42	31.8	31.8
	None	24	18.2	18.2
	Total	132	100.0	100.0

Field survey, 2021

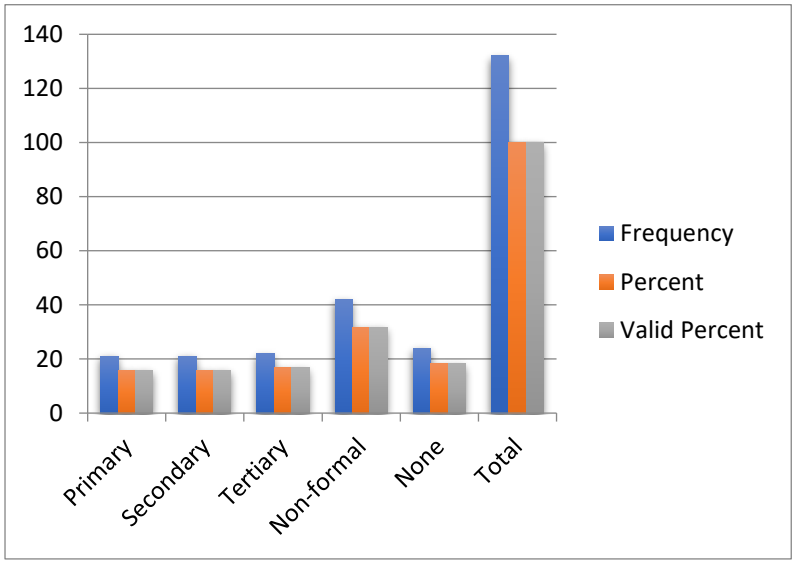

Figure 4.4: Showing the educational qualifications of respondents

At the educational level, the findings reveal that 42(31.8%) had not gone to school at all. Only 21(15.5%) of the participants had gone beyond primary level and among these, 21(15.5%) had completed secondary education while 24(18.2%) had no form of education. The low levels of education could be attributed to high poverty levels and lack of motivation to pursue higher education.

Family size

Table 4.5: Showing the family size

Family Size		Frequency	Percent	Valid Percent
Valid	1-3	8	6.1	6.1
	4-6	99	75.0	75.0
	7-9	24	18.2	18.2
	10 and above	1	.8	.8
	Total	132	100.0	100.0

Field survey, 2021

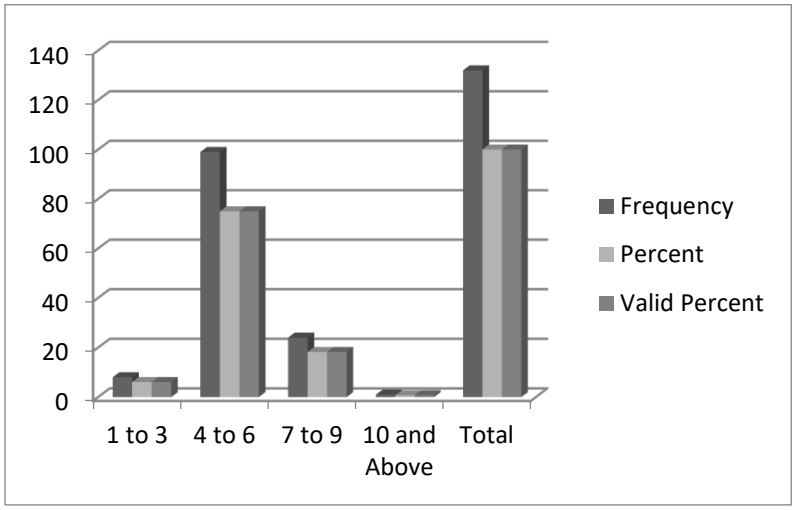

Figure 4.5: Showing the family size

The outcome of the study shows that the majority of the respondent 99(75%) had family size in the of 4-6 persons, those with 7-9 persons are 24(18.2%) while 1-3, and 10 above are 8(6.1%), 1(0.8%) respectively.

Income per Harvest

Table 4.6: Showing the income per harvest

Income per Harvest ₦		Frequency	Percent	Valid Percent
Valid	0-50,000	4	3.0	3.0
	50,000-100,000	21	15.9	15.9
	101,000-200,000	46	34.8	34.8
	201,000-300,000	56	42.4	42.4
	301,000-400,000	5	3.8	3.8
	Total	132	100.0	100.0

Field survey, 2021

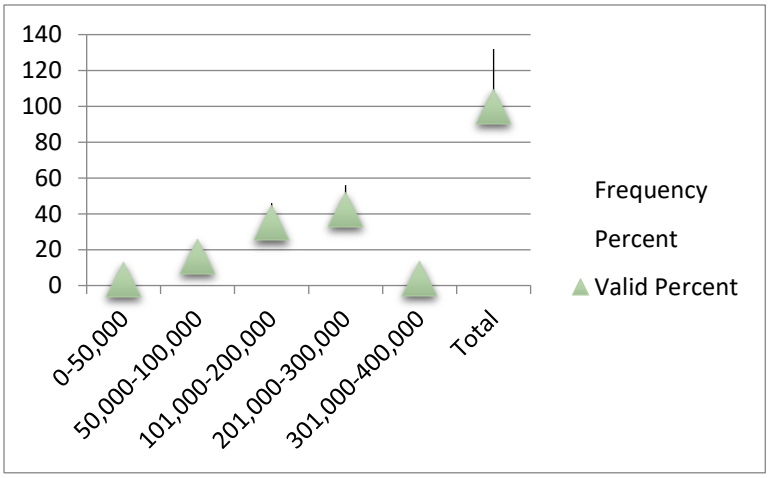

Figure 4.6: Showing the income per harvest

The median family's gross income was less than N200,000. which represents a huge proportion of 46(34.8 %) of the income. A larger proportion of respondents in the range of 201,000-300, 000 had 56(42.4%) of income. while a mere 5(3.8%) earned above 301,000-400,000 in a quarter.

Status of Farmland

Table 4.7: Showing the Status of Farmland

Status of Farmland		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Own	7	5.3	5.3	5.3
	Lease	123	93.2	93.2	98.5
	Total	132	100.0	100.0	

Field survey, 2021

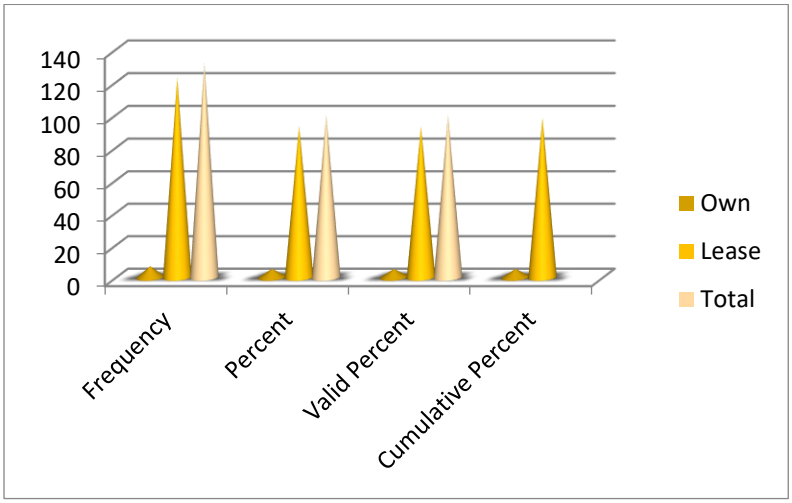

Figure 4.7: Showing the Status of Farmland

The study reveals that 123(93.2%) of the respondent lease the land for their farming activities while the remaining 7(5.3%) own the land.

4.2.1 Bivariate Analysis of the Farmers Socio-demographic Characteristic

Educational level (X^2=14.452, P-value = 0.013) and Income per month (X^2=52.035, P-value = <0.001) are the socio-demographic factors that have statistically significant association with the revenue/profit margin of the farm. However, those with secondary education (OD=1.5, CI= 0.9 -2.7) and non-formal education (OD=1.5, CI= 0.85 -2.72) have higher likelihood of high revenue/profit margin. Those that earn between 101,000 - 200,000 (OD=0.6, CI= 0.3 -0.8) have less likelihood to have high revenue/profit margin

while those that earn between 301,000-400,000 (OD=2, CI= 0.9 -3) have 2 times likelihood to have high revenue/profit margin.

Table 4.8: showing bivariate analysis of the farmers socio-demographic characteristic

S/n	Variable	Categories	Revenue/Profit Margin					
			High	Low	X^2	P-value	Odd ratio	CI
1	Education Level	Primary	0 (0%)	21	14.452	0.013	0	
		Secondary	4 (19%)	(100%)			1.5	0.9 - 2.7
		Tertiary	0 (0%)	17 (81%)			1.5	0.85-2.72
		Non-formal	8 (19%)	22				
		None	0 (0%)	(100%)				
				34 (81%)				
				24 (100%)				
2	Income Per harvest	0-50,000	4 (100%)	0 (0%)	52.035	<0.001		
		50,000-100,000	0 (0%)	21 (100%)			0.6	0.3-0.8
		101,000-200,000	8 (17.4%)	38 (82.6%)			1	
		201,000-300,000	0 (0%)	56 (100%)			2	0.9- 3
		301,000-400,000	0 (0%)	51 (100%)				

Field survey, 2021

4.3 Crops and Area of the farm

Location of the farm

Table 4.9: Showing the Location of the farm

Location of the farm					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Jabi	17	12.9	12.9	12.9
	Karu	59	44.7	44.7	57.6
	Wuse	7	5.3	5.3	62.9
	Apo	27	20.5	20.5	83.3
	Maitama	9	6.8	6.8	90.2
	Gwarimpa	13	9.8	9.8	100.0
	Total	132	100.0	100.0	

Field survey, 2021

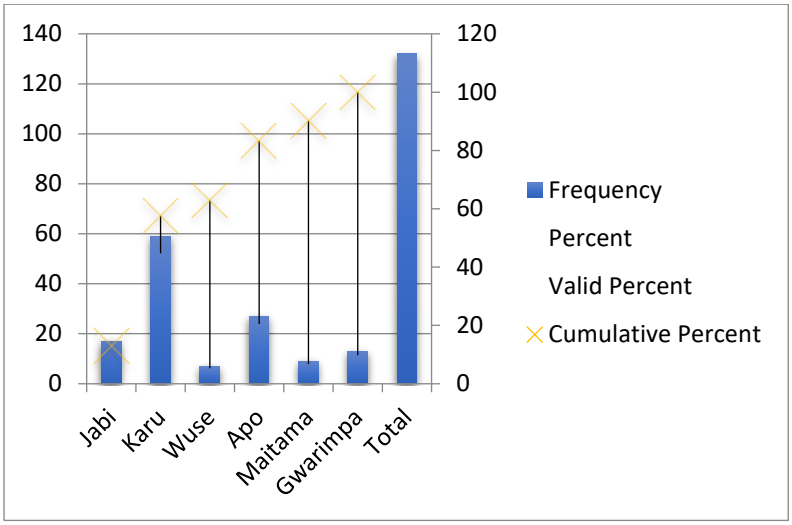

Figure 4.8: Showing the Location of the farm

The areas under review of this assessment are six, namely: Apo, Gwarinpa, Jabi, Karu, Maitama and Wuse. Karu 59(44.7%) has the highest number of farmlands practising urban farming, followed by Apo 27(20.5%), Jabi 17(12.9%), Gwarinpa 13(9.8%). Karu being an area located at the out sketch of the city Centre and a border area to Nasarawa State has a little bit more rural activity.

Types of Crops Planted

Table 4.10: Showing the Types of Crops Planted

Types of Crops Planted					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Vegetables	90	68.2	68.2	68.2
	Fruits	19	14.4	14.4	82.6
	Spices	15	11.4	11.4	93.9
	All mentioned	8	6.1	6.1	100.0
	Total	132	100.0	100.0	

Field survey, 2021

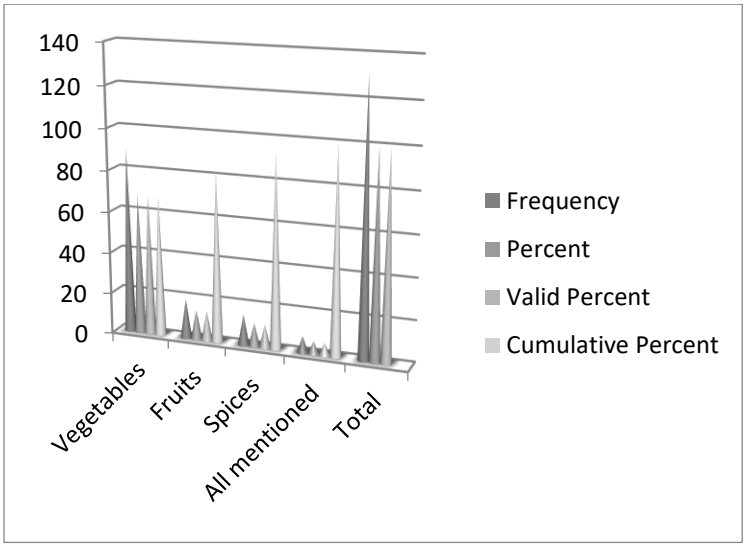

Figure 4.9: Showing the Types of Crops Planted

From the interaction with the farmers, produce is usually purchased by the wholesalers. They further distribute to retailers down to the final consumers. 90(68.2%) of the farmers are into vegetable farming, 19(14.4%) are fruits, farmers, 15(11.4%) are spices while 8(6.1%) plants all that was mentioned.

Farm Size

Table 4.11: Showing the Farm Size

Farm Size		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Small Scale	5	3.8	3.8	3.8
	Medium Scale	106	80.3	80.3	84.1
	Large Scale	21	15.9	15.9	100.0
	Total	132	100.0	100.0	

Field survey, 2021

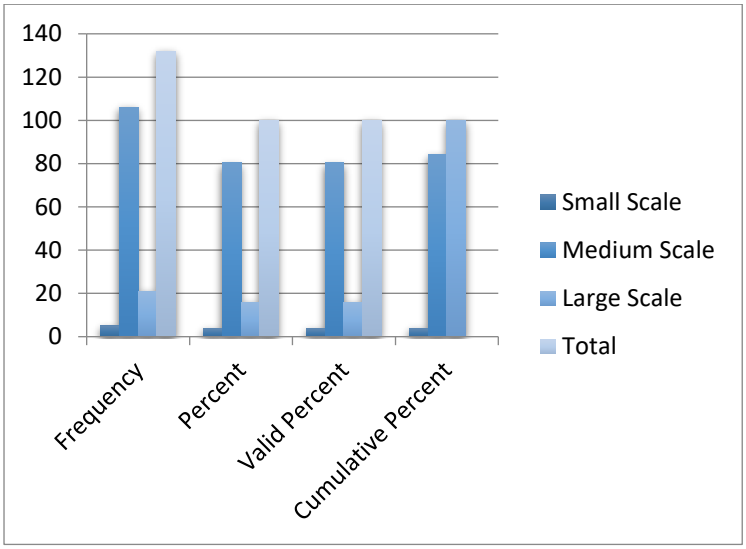

Figure 4.10: Showing the Farm Size

Most of the farms are medium scale (80.3%), large scale (15.9%) and small scale (3.8%).

4.3.1 Bivariate Analysis of Crop and Area of Farm with the Revenue/Profit Margin of the Farm in AMAC, Abuja

Location of farm (X^2= 10.316, P-value = 0.05) has a statistically significant association with revenue/profit margin of the farm in AMAC, Abuja. However, those that are based in APO (OD=1.5, CI= 1-3) and Karu (OD=2, CI= 1.5-3.5) have higher likelihood of generating higher revenue/profit margin.

Table 4.12: showing bivariate analysis of crop and area of farm with the revenue/profit margin of the farm in AMAC, Abuja.

			Revenue/Profit Margin					
S/n	**Variable**	**Categories**	**High**	**Low**	**X^2**	**P-value**	**Odd ratio**	**CI**
1	Location of Farm	Jabi	0 (0%)	7 (100%)	10.316	0.05	1	
		Karu	6 (10.2%)	53 (89.8%)			2	1.5-3.5
		Wuse	0 (0%)	7 (100%)			1.5	1-3
		Apo	6 (22.2%)	21 (77.8%)				
		Maitama	0 (0%)	9 (100%)				
		Gwarimpa	0 (0%)	13 (100%)				

Field survey, 2021

4.4 Peculiarities of urban agriculture in AMAC Abuja

Table 4.13: Showing the time of planting

Time of Planting		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Seasonal	53	40.2	40.2	40.2
	Non-seasonal	79	59.8	59.8	100.0
	Total	132	100.0	100.0	

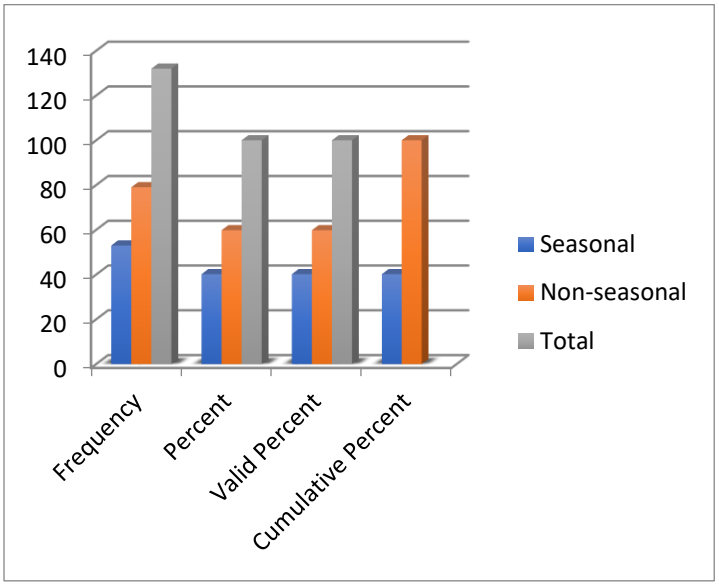

Figure 4.11: Showing the time of planting

It was discovered that majority of the farmer's plants all year round (non-seasonal) 79(59.8%) while the remaining 53(40.2%) are into seasonal farming.

Degree of Participation

Table 4.14: Showing the degree of participation

Degree of Participation		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full Participation	95	72.0	76.6	76.6
	Partial Participation	29	22.0	23.4	100.0
	Total	124	93.9	100.0	
Total		132	100.0		

Field survey, 2021

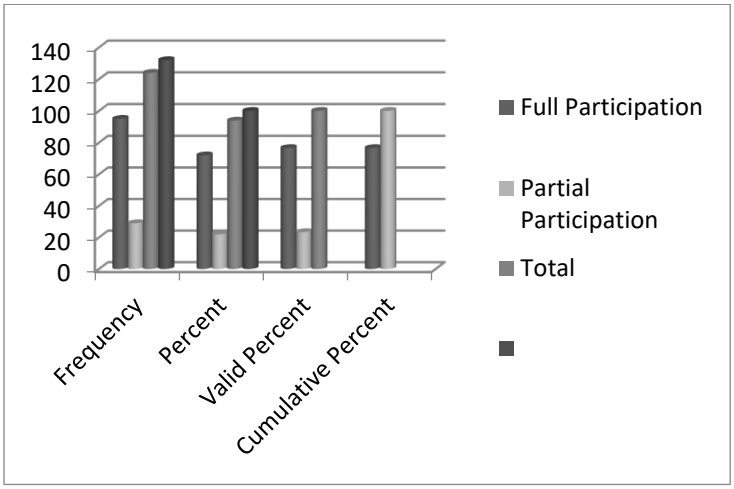

Figure 4.12: Showing the degree of participation

The majority of the respondent 95(72%) actively took part in just farming while 29(22%) of the respondent have other activities they engage in.

Farming Method

Table 4.15: Showing the farming methods

Farming Method		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mechanized	7	5.3	5.3	5.3
	Manual	100	75.8	75.8	81.1
	combination of Both	25	18.9	18.9	100.0
	Total	132	100.0	100.0	

Field survey, 2021

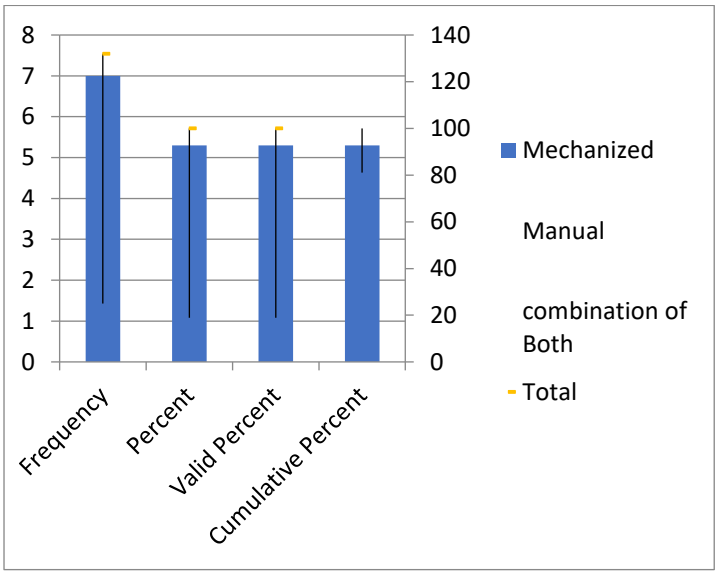

Figure 4.13: Showing the farming methods.

The farming method widely adopted is manual method 100(75.8%) while just 7(5.3%) practice mechanized farming. The remaining 25(18.9%) are combination of both methods.

Types of Fertilizer Use

Table 4.16: Showing the types of fertilizer used

Types of Fertilizer Use					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Val	natural	27	20.5	20.5	20.5
id	Synthet	105	79.5	79.5	100.0
	ic				
	Total	132	100.0	100.0	

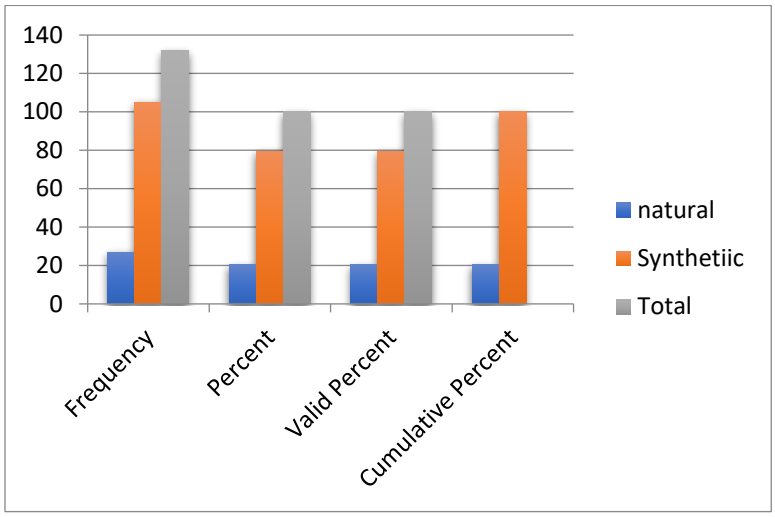

Figure 4.14: Showing the types of fertilizer used

Predominantly, 105(79.5%) of the farmers use synthetic fertilizer while 27(20.5%) use natural fertilizer.

Source of Water

Table 4.17: Showing the sources of water

Source of Water					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Rain Fed	54	40.9	40.9	40.9
	Irrigation	38	28.8	28.8	69.7
	Total	132	100.0	100.0	

Field survey, 2021

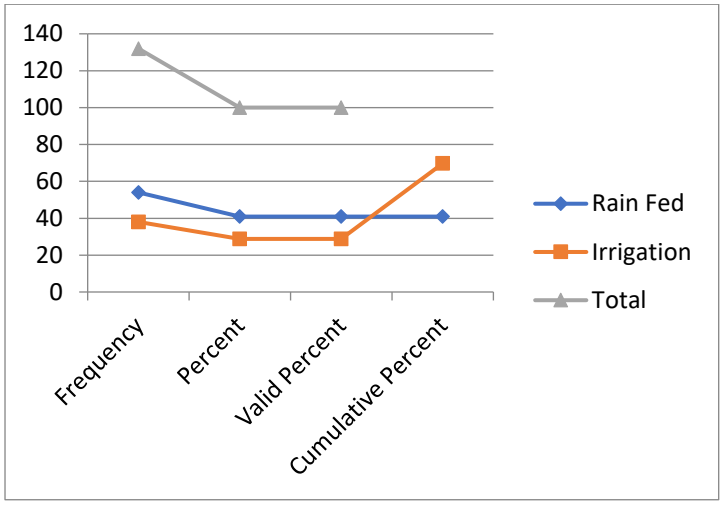

Figure 4.15: Showing the sources of water

54 (40.9%) of the farmers depend on rain fed because it's cost effectiveness while 38 (28.8%) of the farmers make use of irrigation (Fig. 15)

Harvest Period Annually

Table 4.18: Showing the harvest period annually

Harvest Period Annually		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once	33	25.0	25.0	25.0
	Twice	28	21.2	21.2	46.2
	Thrice	71	53.8	53.8	100.0
	Total	132	100.0	100.0	

Field survey, 2021

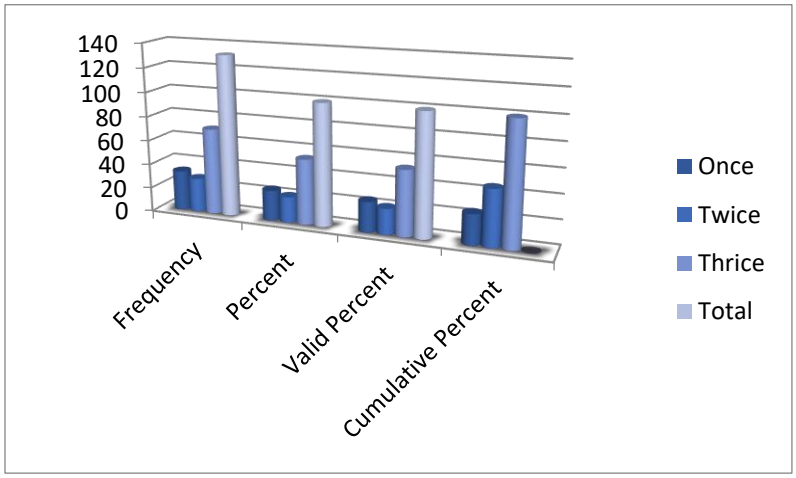

Figure 4.16: Showing the harvest period annually

71 (53.8%) of the farmers engaged harvest thrice a year which is possible because of the readily available irrigation facilities in the urban center, 28(21.2%) twice a year while 33 (25%) harvest once a year (Fig.16)

Consumers means of getting farm Produce

Table 4.19: Showing consumer means of getting farm produce.

Consumers means of getting farm Produce					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Collection	35	26.5	26.5	26.5
	Delivery	89	67.4	67.4	93.9
	Total	132	100.0	100.0	

Field survey, 2021

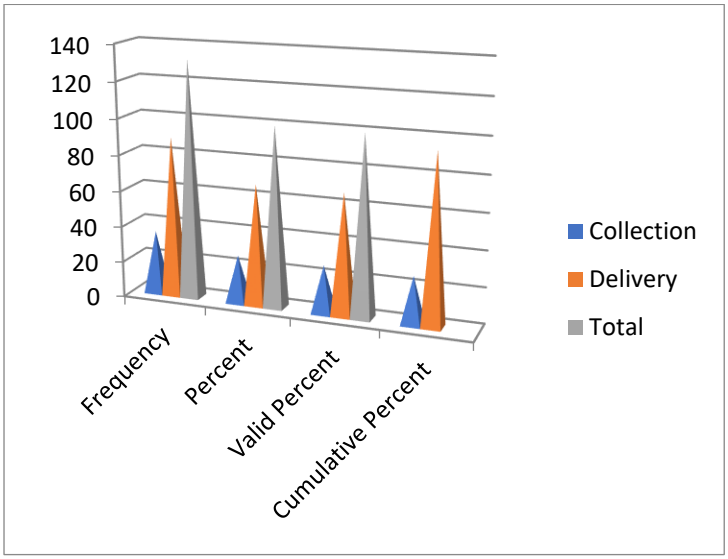

Figure 4.17: Showing consumer means of getting farm produce.

Most of the farm produce are delivered to the customers 89 (67.4%) which is possible due to good access road in urban center linking the farm, market and consumers homes while few of the customers collect their farm produce from the farm predominantly retailers 35(26.5%) (Fig. 17).

Farm Produce Means of Transportation

Table 4.20: Showing the farm produce means of transportation

Farm Produce Means of Transportation					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Motorcycle	39	29.5	29.5	29.5
	Tricycle	71	53.8	53.8	83.3
	Vehicle	22	16.7	16.7	100.0
	Total	132	100.0	100.0	

Field survey, 2021

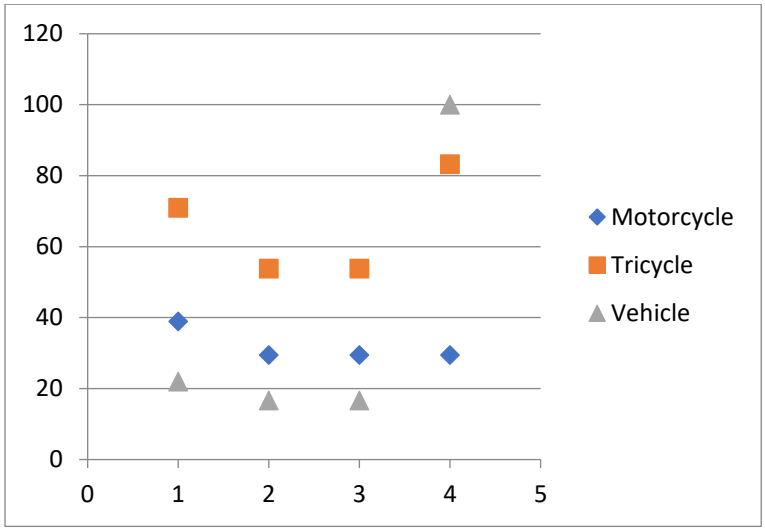

Figure 4.18: Showing the farm produce means of transportation

Predominantly, 71(53.8%) of farm produce are transported via tricycle while 22 (16.7%) use vehicle and 39 (29.5%) motorcycle (Fig. 18)

4.3.1 Bivariate Analysis of Peculiarities of Urban agriculture with The Revenue/Profit Margin of The Farm in AMAC, Abuja

Time of harvest (X^2= 11.485, P-value =0.003), degree of participation (X^2= 4.056, P-value =0.044), farming method (X^2= 5.814, P-value =0.045), water system (X^2= 10.764, P-value =0.005), customers mean of getting farm produce (X^2= 85.775, P-value =0.001), source of capital (X^2= 34.90, P-value =<0.001) were the peculiarities of urban agriculture

that have statistically significant relationship with the revenue/profit margin of the farm in AMAC, Abuja.

Table 4.21: showing bivariate analysis of peculiarities of urban agriculture with the revenue/profit margin of the farm in AMAC, Abuja

			Revenue/Profit Margin			
S/n	**Variable**	**Categories**	**High**	**Low**	**X^2**	**P-value**
1	Time of Harvest	Once	0 (0%)	35 (100%)	11.485	0.003
		Twice	4 (6.6%)	57 (93.4%)		
		Thrice	8 (22.2%)	28 (77.8%)		
2	Degree of Participation	Full	12 (12.6%)	83 (87.4%)	4.056	0.044
		Parttime	0 (0%)	29 (100%)		
3	Farming Method	Mechanized	2 (28.6%)	5 (71.4%)	5.814	0.045
		Manual	10 (10%)	90 (90%)		
4	Water System	Rainfall	4 (7.4%)	50 (92.6%)	10.764	0.005
		Irrigation	8 (21.1%)	30 (78.9%)		
5	Customers mean of getting farm produce	Collection	0 (0%)	35 (100%)	85.775	0.001
		Delivery	4 (4.5%	85 (95.5%)		
6	Source of Capital	Friends	8 (47.1%)	9 (52.9%)	34.90	<0.001
		Personal	4 (5.3%)	72 (94.7%)		
		Savings	0 (0%)	12 (100%)		
		Cooperative	0 (0%)	15 (100%)		
		Banks	0 (0%)	7 (100%)		

Field survey, 2021

4.4 Challenges and Opportunities of urban agriculture in AMAC, Abuja

Table 4.22: Showing security challenges witnessed by farmers

Have you witnessed any security challenges					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Yes	12	9.1	9.1	9.1
	No	114	86.4	86.4	95.5
	3.00	6	4.5	4.5	100.0
	Total	132	100.0	100.0	

Field survey, 2021

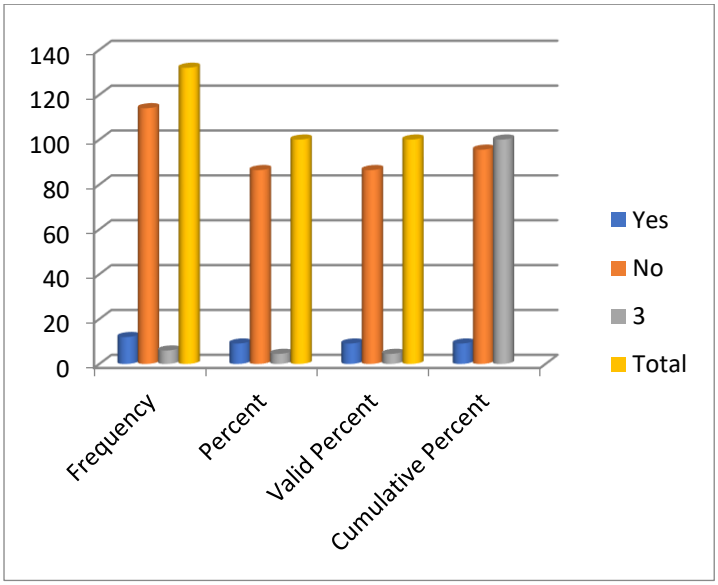

Figure 4.19: Showing security challenges witnessed by farmers

Majority of the farmers have not witnessed security challenge 114 (86.4%) while only few 12 (9.1%) (Fig.19)

Have you experienced any form of encroachment?

Table 4.23: Showing any form of encroachment experienced by the farmers

Have you experienced any form of encroachment					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Yes	48	36.4	36.4	36.4
	No	84	63.6	63.6	100.0
	Total	132	100.0	100.0	

Field survey, 2021

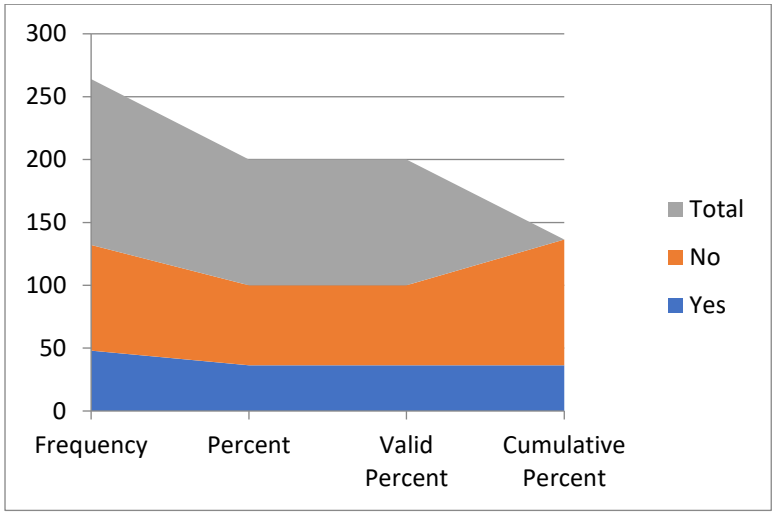

Figure 4.20: Showing any form of encroachment experienced by the farmers

84 (63.6%) of the farmers have not witness encroachment while 48 (36.4%) of the farmers have witnessed encroachment.

Loan and Grant Facilities

Table 4.24: Showing access to loans, grants or subventions.

Do you have access to loans, grants or subventions?					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Yes	8	6.1	6.1	6.1
	No	124	93.9	93.9	100.0
	Total	132	100.0	100.0	

Field survey, 2021

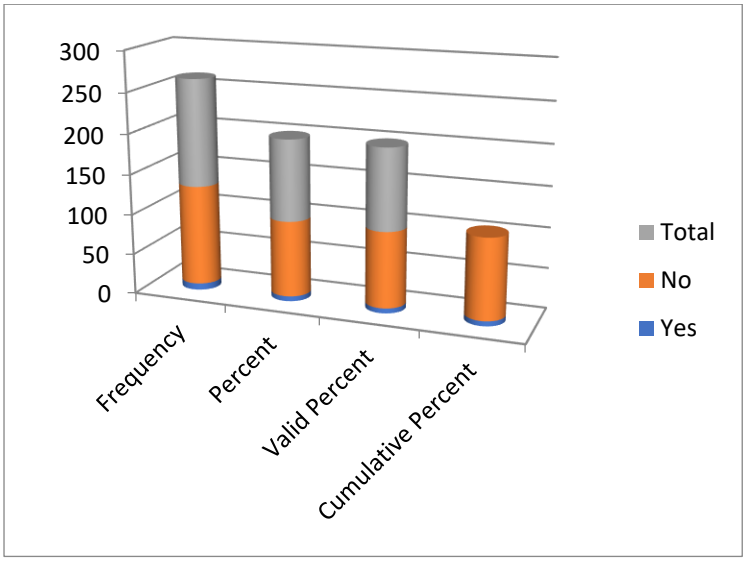

Figure 4.21: Showing access to loans, grants or subventions

About 124 (93.9%) of the farmers do not have access to loans, grants and subvention while 8 (6.1%) of the farmers have access to loans, grants and subvention.

Customer Patronage

Table 4.25: Showing customer's patronage

How is your customer patronage Like					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	High	105	79.5	79.5	79.5
	Low	27	20.5	20.5	100.0
	Total	132	100.0	100.0	

Field survey, 2021

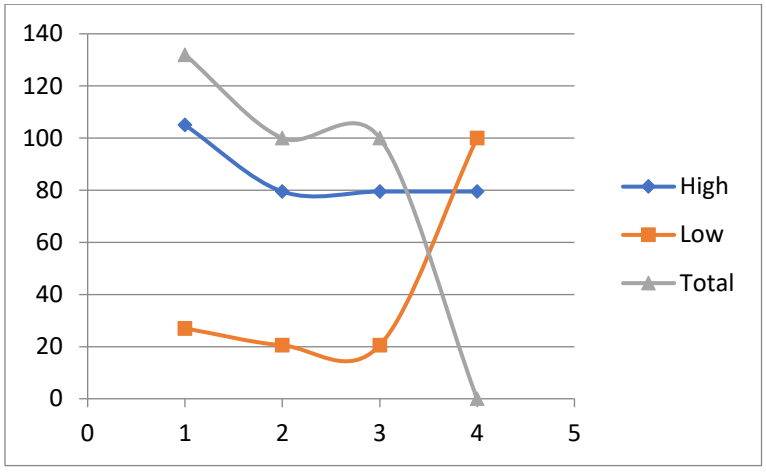

Figure 4.22: Showing customer's patronage

Majority of the farmers have high customer patronage 105 (79.5%) and minority have low customer patronage 27 (20.5%)

Cost of Investment

Table 4.26: Showing the cost of investment

How is the cost of Investment					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	High	110	83.3	83.3	83.3
	Low	22	16.7	16.7	100.0
	Total	132	100.0	100.0	

Field survey, 2021

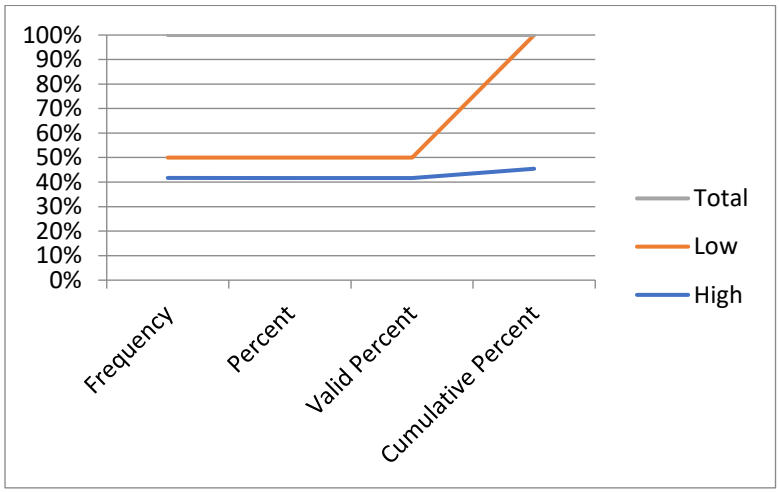

Figure 4.23: Showing the cost of investment

Most of the farmers claimed high-cost investment, 110 (83.3%) of the respondence were on high side while 22(16.7%) claimed low investment.

Profit Margin

Table 4.27: Showing the revenue/profit margin

How is the revenue/profit margin like					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	High	12	9.1	9.1	9.1
	Low	120	90.9	90.9	100.0
	Total	132	100.0	100.0	

Field survey, 2021

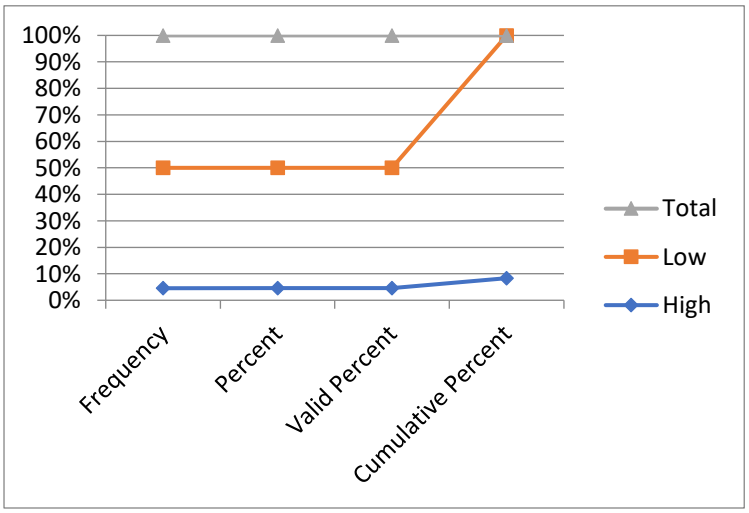

Figure 4.24: Showing the revenue/profit margin

The different in cost investment and revenue generated by farmer gives the profit margin, only 12 (9.1%) were able to make high profit margin, these are very low value compare to 120(90.9%) of the respondence farmers who made low profit margin at the end of farming season.

Accessibility to the market

Table 4.28: Showing how is the accessibility to the market like

How is the accessibility to the market like					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Easy	33	25.0	25.0	25.0
	Hard	99	75.0	75.0	100.0
	Total	132	100.0	100.0	

Field survey, 2021

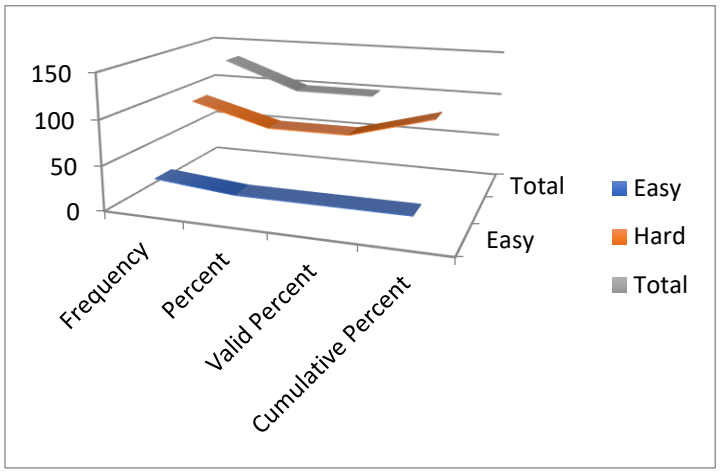

Figure 4.25: Showing how is the accessibility to the market like

The degree of accessibility to market are vary amongst the farmers under the review of this study, it was easy for 33 (25.0%) of the respondence to access market while 99 (75.0%) found it hard to access market. This means most of the farmers find it hard to access market.

4.4.1 Bivariate Analysis of challenges and opportunities of urban agriculture in AMAC, Abuja

Security challenge (X^2= 75.958, P-value = <0.001), access to loan, grants and subvention (X^2= 85.161, P-value = <0.001) and customers patronage (X^2= 17.325, P-value = <0.001) are the challenges and opportunities of urban agriculture that have statistically significant relationship with revenue/profit margin of farm in AMAC, Abuja. However, those that

have witnessed security challenge (Od=0.6, CI= 2-0.2) have less likely to have high revenue/profit margin, those that have access to loan, grants and subvention (Od=2, CI= 1.5-3) have higher likelihood to have high revenue/profit margin and those that have high customer patronage (Od=3, CI=1.7-3) have high likelihood to have high revenue/profit margin.

Table 4.29: showing bivariate analysis of challenges and opportunities of urban agriculture in AMAC, Abuja

			Revenue/Profit Margin					
S/n	**Variable**	**Categories**	**High**	**Low**	**X^2**	**P-value**	**Odd Ratio**	**CI**
1	Security Challenge	Yes	4 (33.3%)	8 (66.7%)	75.958	<0.001	0.61	2-0.2
		No	2 (1.8%)	117 (98.2%)				
2	Access to loan, grants, and subvention	Yes	8 (100%)	0 (0%)	85.161	<0.001	21	1.5-3
		No	4 (3.2%)	120 (96.8%)				
3	Customer Patronage	High	4 (3.8%)	100 (96.2%)	17.325	<0.001	21	1.7-3
		Low	8 (29.6%)	19 (70.4%)				

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The importance of Urban agriculture is continuously gaining awareness, particularly in developing economies, because it has been discovered to be a viable intervention strategy for the urban poor to earn additional income for betterment of their livelihood. Localized agriculture has always been the domain of communities, led and pushed by competent and dedicated individuals who farmed food to feed their communities. Moreover, localized agriculture has worked without major problems. This study attempted to depict the peculiarities of urban agriculture, areas and crops planted, socio-demographic characteristics of the farmers, challenges and opportunities related to urban agriculture in AMAC.

5.5 Recommendation

1. Establishment of Public Planning Bureau or Commission saddled with principal role of supporting urban agriculture and its growth towards more sustainable urban areas.
2. Development of policies devoid of undue burden on urban dwellers.
3. Development of gender sensitive incentives that favour farmers thereby improving the socio-demographic characteristics of farm owners.
4. There is also need to develop agricultural infrastructures in Karu, Apo and Jabi, being agrarian areas to enhance socio-economic development in Abuja.
5. A further study is also required that will cover all influential neighboring States to Abuja.

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APPENDICES

QUESTIONNAIRE ON ASSESSMENT OF URBAN AGRICULTURAL PRACTICES IN AMAC, ABUJA

My name is Moshood Abdulmajeed Abdulsalam, a master student of Sustainable Urban Development from Federal University of Technology, Minna. I am researching the Assessment of Urban Agricultural Practices in AMAC, Abuja. You are kindly requested to assist in answering the questions below. This research is purely for academic purpose and will be treated with strict confidentiality.

Socio-demographic characteristics of the respondent (Farm Owner)

1. Sex of respondent (a) male (b) female
2. Age of respondent (a) 15-25 (b) 26-35 (c) 36-45 (d) 46-55) (e.) 56 and above
3. Marital status of respondent (a) married (b) single (c) divorced (d) widowed
4. Level of education (a) primary (b) secondary (c) tertiary (d) non-formal (e) none
5. Family size (a) 1-3 (b) 4-6 (c) 7-9 (d) 10 and above
6. Annual income ₦ (a) 0-N50, 000 (b)N50,000-N100,000 (c)N100,000-N200,000 (d)N200,000-N300,000 (e)N300,000-N400,000
7. Status of farm land (a) own (b) lease

Crops and Area of the farm

1. Location of the farm: (i) Jabi (ii) Karu (iii) Wuse (iv)Apo (v) Maitama (vi)Gwarimpa
2. Types of crops planted: (a) vegetables (b) fruits (c) spices (d) all mentioned
3. Farm Size: (a) Small Scale (b) Medium Scale (c) Large Scale

Peculiarities of urban agriculture

1. Time of planting (a) seasonal (b) non-seasonal

2. Time of harvest (a) once (b) twice (c) thrice
3. Degree of participation (a) full participation (b) partial participation
4. Farming method (a) mechanized (b) manual (c) combination of both
5. Types of fertilizer use (a) natural (b) synthetic
6. Source of water (a) rain fed (b) irrigation
7. Harvest period annually (a) once (b) twice (c) thrice
8. Consumers means of getting farm produce (a) collection (b) delivery
9. Farm produce transportation means (a)Motorcycle (b) Tricycle (c) vehicle
10. Condition of produce after transported to market……
11. Types of agricultural activity practiced (a) crop propagation (b) animal husbandry (c) both
12. Source of capital (a) friends (b) personal (c) savings (d) government (e) cooperatives (f) banks (g) thrift

Challenges and Opportunities of urban agriculture

1. Have you witnessed any security challenges? (i) Yes (ii) No
2. Do you experience any form of encroachment? (i) Yes (ii) No
3. Do you have access to loan, grants and subventions? (i) Yes (ii) No
4. How is your Customer Patronage like? (i) High (ii) Low
5. What is the cost of investment? (i) High (ii) Low
6. How is the Revenue/Profit margin like? (i) High (ii) Low
7. How is the accessibility to the market like? (i) Easy (ii) hard