Ginger Production and Poverty Alleviation in Kaduna State; Nigeria A Case Study of Zango Kataf Local Government; Kaduna State

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NOVEMBER 2019

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS, FACULTY OF MANAGEMENT AND SOCIAL SCIENCES, FEDERAL UNIVERSITY GUSAU , ZAMFARA STATE IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A BACHELOR OF SCIENCE DEGREE IN ECONOMICS

NOVEMBER 2019

DECLARATION

I hereby declare that this research project is a work of my own effort. It has not been presented or published anywhere by any person, institution or organization or used for any previous application for a degree or other qualifications. All sources of information used have been correctly acknowledged by means of references.

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CERTIFICATION

I certify that this project has been read and approved, as having satisfied one of the criteria for an award of Bachelor of Science degree (B.Sc.) in Economic, Department of Economics, Faculty of Social and Management Science, federal university gusau.

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DEDICATION

This piece of work is dedicated to God Almighty the creator of all things, who in his infinite grace and mercy has spear my life and kept me going till this time and beyond. I also dedicate this work to my parents, brothers and sisters for their continuous support till this time and beyond.

ACKNOWLEDGEMENT

It is my pleasure to use this medium to express my gratitude to God, for His mercies and benevolence to me.

I would want to thank my Supervisor, Mal Matiu Abdulganiyu, for the special interest he showed in this work without which it would have been impossible to complete. The quality of the work was the outcome of the fact that he had put his mind behind the work, making sure that all aspects of the work were taken into consideration.

I also thank my head of department Dr. Suleiman Dahiru and the entire lecturers in Economic Department of Federal University Gusau (Prof. Tuḳur, Prof. Y.A. Zakari Prof. Gatawa, Prof. Aleiro, Prof. Mikailu, Dr. Dambo, Mal. Masur, Mal. Mustapha Kanoma, Mr. Elijah Sunday, Mal. Namadina, Mal. Sani Sami.) for the knowledge invested in me.

I also want to appreciate the entire staffs both academic and non-academic of Federal University Gusau for they support during my studies in the school.

To my parents Mr Vincent and Mrs Josephine Ameh for giving me the maximum support I needed ever since I started my studies through prayers, encouragement and all. Also, to my loving brothers and sisters for their relentless sacrifice to the success of my study.

My gratitude also goes to Mr Micheal Umaru, Godwin Edward and Abbas Hussaini for their support morally, educationally and otherwise, I pray God will reward you abundantly now and forever.

To my able course mates and friends who contributed to the success of my research study most especially Shamsu Lawal, Rita Ochefu Abbah and others. I really appreciate your efforts towards my success.

Finally, to those who contributed in one way or the other. I really appreciate all your efforts and I pray God bless you each abundantly now and forever.

ABSTRACT

This study investigates the impact of ginger production in alleviating poverty in ZangoKataf local government area of Kaduna State, Nigeria. The study adopted primary research method in which questionnaires was administered to collect information regarding the objectives of the study. A sample size of Two hundred and eight (208) was adopted using the Taro-Yamane (1967) sampling procedure. The data were analyzed using the descriptive and the inferential statistical techniques; this was facilitated by the use of Statistical Package for Social Sciences (SPSS). The findings reveal that 43.43% of the farmers have been into ginger production for the past 11 years and above. Majority of the farmers 61.11% uses hired labour; the result from the findings also revealed that ginger farming has great impact on poverty alleviation in Zango Katap Local Government Area. The result from the hypothesis shows that the annual incomes of the farmers in the study area have significant impact on the poverty alleviation in Zango Katap Local Government.

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CHAPTER ONE

INTRODUCTION

1.1 Background Information

Nigeria has in recent years, been involved in executing painful economic recovery Programmes arising from recession in international oil market and changes in the Macroeconomic direction of the world. This is the consequence of dependence on a Monolithic (crude oil) economy at the expense of other untapped economic resources of the Nation. It will be recalled that in the 1960s, Nigeria relied heavily on the agricultural sector for economic development (contributing over 70% of the GDP). But with the oil boom of the 1970s, the contribution of agriculture fell drastically to the extent that the nation became a net-importer of major agricultural commodities in the 1980s. Farming became an unattractive and non-lucrative business, but a means of survival for the aged in the rural areas (Husseini, 1996).

Government, aware of this dangerous trend, has since put in place various policies and programmes geared towards resuscitating the sector. The introduction of the National Accelerated Industrial Crops Programme (FMAWR, 1993) is one of such programmes of the Federal Government of Nigeria aimed at boosting the country's foreign exchange earnings and, at the same time, put Nigeria's name on the agricultural exporting league. This programme, which applies the principle of comparative advantage, encourages the Production of cash crops adapted to each ecological zone of the country (FMAWR, 1993).

The downward trend in the world market for crude oil (Nigeria's major foreign Exchange earner since the early 1970s) underscored the need for alternative sources for

foreign exchange. Nigeria possesses the potential to produce many crops that could be exported to earn the much needed foreign exchange, and ginger, is one of such crops. It holds a lot of prospects as an export crop because, unlike other export crops, like palm products and ground nut, it is not a major Food staple (Eluagu and Uswu, 1988).

Nigeria began to cultivate ginger in 1927 (Gibbon 1953), when an investigation, was carried out to find a crop that would generate internal trade for the people of southern province of Kaduna, the traditional home of ginger in Nigeria. Subsequently, Nigeria became a major exporter of ginger to the United Kingdom and elsewhere by 1959, 1,582tonnes were exported. This later declined significantly so that by 1984, only about 27 tonnes were exported (Federal Office of Statistics (FOS, 1985).

Over the years, the output increased though with substantial variation in production levels. In 1977, Nigeria exported 3,000 tonnes of dried ginger which yielded £1.8 million,(N2.6m) in foreign exchange. Out of an estimated world production of 50,000 tonnes (dry weight), Nigeria produced 15,000 tonnes, surpassed only by India, the largest producer (Arene *et al.,* 1987). The post –1977period witnessed a marked decline in Nigeria's production and export of ginger. Consequently, Nigeria continued to lose large amounts of money yearly to other countries in respect of importation of ginger products for augmenting domestic demand (FIRO, 1980). Available statistics show that ginger ale accounts for more than three percent of total soft drink market (Eluagu and Ugwu, 1988).

On the supply side, (Eluagu and Ugwu, 1988) reported that for the past several decades, ginger production in Nigeria has been in the hands of peasant farmers who operated small holdings of 0.05 - 0.5ha, mostly in southern Kaduna districts of Zango

kataf local government, Kagarko, Jabba and Kachia. This implies that the sub-sector is dominated by small-scale producers.

On the demand side, ginger was found to have good markets especially in culinary preparation and soft drink manufacturing. Trade in ginger was the responsibility of the Nigerian Exporting Marketing Boards. Specifically, the Northern States Marketing Board (NSMB) was responsible for the marketing of ginger and other export crops produced in the Northern states (Eluagu and Uwgu, 1988). What are not known in respect of the domestic market, are the statistics on the volume of production, distribution and consumption. Lack of this basic information poses a serious constraint on any plans regarding ginger production, marketing, processing and utilization in Nigeria (Asomugha, 1988).

In contrast to this situation in the domestic market, Eluagu and Ugwu (1988) found out that the export market for Nigeria ginger was more developed. Thus, the role of ginger as an export crop and in Nigerian economic growth and development is enormous (Caves, 1965,Le Heron, 1980; Elias and Gados, 1980; Okoli, 1987).

The economic value of ginger (ZingiberOfficinale Roscoe) centres on its uses in the preparation of medicines, foods and in the manufacturing of beverages, pharmaceuticals and perfumes. In foods, ginger is used to flavour bread, cakes, biscuits, sausages and cookies. It is also blended with other spices for household uses. Ginger ale, ginger beer, and ginger tea are among the beverages produced with it (Rodriguez, 1971). It's also used to some extent in perfume products (Patel, 1972).

On the domestic scene, ginger is gaining acceptance as a flavouring agent, competing favourably with curry and maggi cube in this regard. It is becoming popular

with "suya" (roasted meat) industry. With the emphasis currently being placed on local sourcing of raw materials in Nigeria, it is envisaged that in the very near future, ginger will be industrially utilized on a larger scale for the manufacture of an assortment of perfumes, confectionery, alcoholic drinks and pharmaceuticals.

1.2 Statement of the Problem

In the world ginger trade, Nigeria was ranked as one of the principal exporting Countries. According to Rodriguez (1971), Sierra Leone, Nigeria, India and Jamaica were the principal exporters of ginger to the international market.

Important as this crop is, it has remained essentially a neglected crop in research development and policy (NRCRI, 1987).

This anomalous situation is symptomatic of an existing policy gap. Without Appropriately formulating policies, implementation of programmes are not well guided and goals become unattainable (Idachaba, 1980).

About 75% of the population of Zango kataf local government are involved in ginger production both male and female. In the district, ginger production and sales serves as a major source of income for provision of daily needs, and so both men, women, young men and even children engage in ginger production. The people in this district are deeply engaged in the production of ginger, while some farmers basically engage in only ginger production, others primarily produce ginger and other goods.

The farmers are faced with many problems such as, limited supply of agro chemicals, and fertilizers for high productivity, break out of pest and diseases, bad accessible roads to take the produce to the market after production, poor marketing of the product, etc.

Southern part of Kaduna state have been observed to have exclusively handled ginger production, processing and marketing within the state for quite sometimes now. For instance, more than 75% of the populations in the study area engage in ginger production, yet the participant of this huge amount of her population is not felt in the economic development of the study area (Wendock, 1993). Therefore a study into the production of ginger, its marketing, distribution, problems (of production and sale) and its socio-economic importance to the people and the nation at large is necessary. Moreover, in order to improve ginger production in the country, there is a need to identify and remove all obstacles that hinder effective participation in agricultural production in general and ginger in particular. Since there is inadequate and lack of up to date data to determine the level of ginger production, its benefit to the people, the problems of ginger production, etc. This study will be of great help to the government, the producers and the general public.

Economic research on ginger marketing is limited. Hence the need for research into the production of ginger is therefore necessarily to periodically study the past and present levels of ginger production in Nigeria with a view to revealing the constraints and potentials of the product and early remedial measures taken to ameliorate the situation, such that at all times, Nigeria is striving towards efficiency on both the domestic and international markets.

Moreover, apart from the fact that there is paucity of data on the prices of ginger and their effects on the farmer's income, people merely speculate about factors influencing ginger production, and the effects of growing the crop on the producers'

welfare. A study on these issues will certainly clarify speculations and assumptions thus providing a way forward.

1.3 Research Questions

The fundamental questions that may be bordering the minds of many in respect to the present study might include the following among many.

i. What is the economic importance of ginger production in Zango kataf local government area?

ii. How can ginger production help alleviate poverty in the study area?

iii. What are the problems encountered during ginger production in Zango kataf local government area?

The present study will attempt to provide answers to the above and many others questions.

1.4 Aims and objectives

The aim of this research is to provide quantitative empirical information on the production of ginger and how it can help alleviate the lingering problem of poverty in Zangon kataf local government.

The specific objectives of this study include the following:

i. To examine how ginger production can help alleviate poverty in zangokataf local government.

ii. To identify the problems encountered in ginger production in zangokataf local government and measures they adopt to cope with the problem.

1.5 Research Hypothesis

In the course of the study, the following hypotheses will be tested.

H_0: Ginger production does not alleviate poverty in zango kataf local government area of Kaduna state.

H_1 Ginger production alleviates poverty in zango kataf local government area of Kaduna state.

1.6 Significance of the Study

In Nigeria, where agricultural exports played a significant role in the country's development in the 1950's and 1960's, the economic horizon has changed drastically both in the domestic economy and in the international trade arena. For this and other reasons, traditional exports like palm produce; cocoa and groundnut can no longer be relied upon by Nigeria for meaningful foreign exchange - earning (Obadan, 1993). It is in line with the foregoing, that ginger which in the past had been a good foreign exchange earner but which currently is neglected comes handy as an agricultural commodity that is capable of ensuring increased foreign exchange earnings for the country.

Developing countries have recognized the potential benefits of agricultural export development among which are: the need to overcome the external resource gap, to promote industrialization, to create employment and develop entrepreneurial abilities and technical progress (Uduebo 1994).

The Structural Adjustment Programme embarked upon by Nigeria did not succeed completely in diversifying the export base, which remained narrow and largely dependent on petroleum products and a few agricultural and mineral exports (Mullei, 1994).Consequently, the Nigerian economy is susceptible to external shocks and economic distress each time the major product, oil, faces unfavourable market condition. It is in order to find ways of cushioning these economic shocks and distresses that new

non-oil products capable of earning foreign exchange for the country becomes imperative and ginger is one of such non-oil agricultural commodity.

This research is therefore designed to fill the research gap on ginger production. Also the study is desirable because ginger production can improve rural income and provide various occupations to groups like farmers, extension workers, policy makers, exporters, importers, co-operators,researchers and transporters (CTA, 1997; Dixie, 1987), this means that ginger production can go a long way in increasing the income and standard of living of the farmers and help other professional groups in many ways.

Also, Findings from this research can be applied to the high incidence of poverty in Zango kataf local government and other local government area of Kaduna state and the nation as a whole.

Finally, this study will generate data and information on ginger production and hopefully researchers and students will find this a very useful reference material.

1.7 Scope of the Study

This research is carried out within the confines of Zango kataf local government area of Kaduna state, it deals with a critical in-depth evaluation on ginger production and how it can alleviate poverty. The choice of Zangokataf local government area is informed by the fact that it is faced with challenges such as hunger, high rate of illiteracy, low productivity and lack of social amenities etc.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

As the name implies, literature review discusses the existing literature related to the research being conducted. Literature review is not just listing of various studies that are remotely related to the problem at hand but it is characterized by using direct works related to the research problem and those that are not directly connected can be implicated in it. Thus in studying the impact of ginger production in Zangokataf local government and poverty reduction on the economy, reference is made to a number of written documents already advanced in respect of the area of study.

2.1 The Historical Background of Ginger

Ginger is native to Southeastern Asia (Wagner, 1980). It is mentioned in ancient Chinese, Indian, and Middle Eastern periodicals and has long been valued for its aromatic, culinary, and medicinal properties (Langner, 1998 in Neeru *et al,* 2014). It has been used extensively for more than 2500 years in China for headache, nausea, and colds (Grant and Lutz, 2000). Ginger (*Zingiberofficinale* Roscoe) belongs to the family Zingiberaceae and genus *Zingiber* to which belongs turmeric, cardamom and galandal (Wagner, 1980).

Ginger originated in Southeast Asia (probably in India) and was likely domesticated first by the Austronesia people. It was transported with them throughout the Indo-Pacific during the Austronesia expansion, reaching as far as Hawaii (Sutarno *et al,* 1999). Ginger was also one of the first spices exported from Asia, arriving in Europe with the spice trade. The medicinal properties of ginger were known in ninth century in Germany and France and in tenth century in England (Lee *et al,* 2008). Records suggest that ginger was highly valued as an article of trade during the 13th and 14th century in England; one pound of ginger had the same worth as that of

sheep (Neeru *et al,* 2014). History shows that ancient Romans imported ginger from China almost two thousand years ago. By the middle Ages it was a very popular spice in the Mediterranean region and had spread throughout other countries. Medieval writing from many European countries indicates that ginger was a standard ingredient in recipes for the kitchen and the apothecary (Ajav and Ogunlade, 2014). In an attempt to make it more available, Spanish explorers introduced ginger to the West Indies, Mexico, and South America in the 16th century and these areas began exporting this precious herb back to Europe. Ginger plants grown in pots were carried abroad on long sea voyages to prevent scurvy (Ravindran and Nirmal 2016).

The Arabs took the plant from India to East African in the thirteenth century and the Portuguese took it to West Africa and other parts of the tropics in the sixteenth century. Within a short time, Portugal was able to get its supply of ginger from Sao Tome. As living rhizomes of ginger are very easy to transport, the plant was quickly taken throughout the tropics (Neeru *et al,* 2014).

Ginger production was formally introduced in the Nigerian agricultural sector in 1927 with cultivation around specific areas of Southern Kaduna – Kwoi, Kubacha, Kafanchan and Kagarka and neighboring parts of Plateau State. In recent times, ginger cultivation has been introduced into the South eastern and Southwestern agricultural zones in Nigeria (KADP 2000).

Currently, there are approximately 25 varieties of ginger grown worldwide. Most of these varieties are yet to be properly characterized (KADP 2018). They however, do differ in size of the rhizome, flavour, aroma, color and fibre content. In Nigeria, there are two major varieties grown which differ in colour of their rhizomes; namely reddish and yellow varieties (FAO

2004). Available cultivars of ginger in Nigeria include UG1 (*Tafingiwa* – elephant's foot type), UG2 (*Yatsunbiri* – monkey's finger type and Maran (KADP 2000).

Ginger throughout the world is used as a spice or fresh herb in cooking as well as a range of other value added products including flavoring in candies, beverages. Traditionally, it is utilized in Nigeria for both medicinal and culinary (kitchen) purposes as well as in the confectionery industry. Nigeria has contributed significantly to the global production of ginger since 2008 and subsequently became a major exporter of ginger to United Kingdom, Germany, Spain, France, Saudi Arabia, and United States of America among others3.The global production of ginger was 2.1 million tons in the year 2013. Table 2.0 below highlights the major producers of ginger in the world.

Table 2.0 Major Ginger Producers in the world

GLOBAL PRODUCTION OF GINGER	**2.1 MILLION TONS**	
1 **Country**	**Production Volume**	**Percentage**
India	0.683 million tons	33%
China	0.390 million tons	19%
Nepal	0.235 million tons	11%
Indonesia	0.233 million tons	11%
Nigeria	0.160 million tons	8%

Source: World Atlas, 2013.

According to National Root Crop Research Institute (NRCRI), the average yield of ginger for the yellow and black variety are 35 t/ha and 25 t/ha respectively. However, the productivity of ginger at the farmer level in Nigeria is low compared to the potential yield that can be obtained. This can be attributed to the fact that most of production is undertaken by smallholders and traditional farmers with rudimentary production techniques and low yields.

Additional findings from NRCRI shows that yellow ginger variety (UG1) which is mostly grown by farmers, yields about 15 t/ha while the black ginger variety (UGII) yields approximately 11-12 t/ha on farmer's field. It can be deduced that the yellow ginger is relatively higher yielding than the black ginger and also most preferred among buyers as such not popular among farmers. In fact, according to NRCRI, in the international market, Nigerian yellow ginger (UG1) is rated as the best because of its pungency and high level of oleoresin oil, which is the active ingredient most commonly sought for in the ginger industry (FOA, 2018).

2.3 Study Area

Historical Background

Zangon Kafat Local Government is in the southern part of Kaduna State. It was created on 27th May, 1989 from the former Kachia Local Government. The headquarters of the Local Government is Zonkwa. The Local Government is made up of 4 Chiefdoms with 52 districts. These Chiefdoms is divided among the four prominent tribes within the Local Government, namely, Atyap, Angham, Bajju, and Ikulu. There are also other tribes like the Fulani, Hausa, Igbo and Yoruba in the area (KADP 2018)..

Zango Kataf LGA used to be a part of Kachia LGA, and it consists mainly of two groups of people - the Kataf (Atyap) who are predominantly Christians, while in Zango towns one could easily identify the Hausas, who are mostly of Muslims sect (Bitrus and Mallo, 2018).

Under the British rule, the Zango-Kataf was placed under the Zaria emirate. This LGA has endured ethnic and communal conflicts in the past (Kwekudee, 2014). There have always been episodes of conflict between these two groups-the Zangos and the Katafs. The first major outbreak was in 1992, which arose over a conflict regarding a market in the town. On April 18, 2011 there was post-election crisis in Zonkwa, followed by another crisis on the 20th of April 2011 at Anchuna Ikulli Chiefdom (Zwahu, 2012). There has also been religious war/crisis between the Christians and Muslims in this area.

Location and Vegetation

Zango Kataf Local Government Area (LGA) of Kaduna State, Nigeria lies between latitudes 9° 25′N and 10° 20′N and between longitude 7° 45′E and 8° 40′E with a total land area of about 5,625km2. It is bounded in the north by Kajuru LGA, in the west by Kachia LGA, in the east by Kauru LGA and in the south by Jema'a LGA, all of Kaduna State. Zango – Kataf LGA is located within the tropical continental climate (Koppen"s AW) with two distinct seasons –wet and dry. The vegetation type found in the study area is Southern Guinea Savanna type characterized by thick woodlands, tall grasses and herbs with riparian forest along streams and river banks ((Bitrus and Mallo, 2018).).

Population

According to National Population Census (2006) the Local Government had a population size of 318,991. However, the National Bureau of Statistics (2012) estimated the projected population size of 370,615 by the year 2011. Average population density of the Local Government is about76 persons per squares kilometer. The sex ratio of this population (NPC, 2006) stood at: 162,047 males to 156,944 females (approximately 50.8: 49.2). The structure of the population indicates that a higher proportion are children and youths who constitute about 65% of the entire population, a relative low middle and old age group. Thus, it is basically a fast growing population. The growth rate has been estimated to be 3.0% per annum (National Bureau of Statistics, 2012).

Economy

Majority of the people in the area are farmers. They produce crops like ginger, yam, soybeans, cocoyam, mangoes, maize, guinea corn, cassava, millet, poultry, and cattle rearing.

Other economic activities in the state include trading in items carving, Kitchen utensils, house hold electronics, clothes, ceramics, foodstuffs, vegetables and fruits, to high quantity textile materials (Bitrus and Mallo, 2018)..

2.4 GINGER PRODUCTION

Climate and Soil

Ginger requires an abundance of rainfall above 1000mm distributed well over the period of 6-8 months during the ginger growing period (Ihuoma *et al,* 2018). The day temperature could range between 23 – 35°C. The elevation could vary from sea level up to 800 meters or more. The ginger plant thrives in hot and moist climate with abundant shade and in rich well drained loamy soils with plenty of manure but in the savannah zone, ginger flourished under minimum or lower temperature and rainfall as stated above. Ginger can also be grown as an irrigated crop in areas of less rainfall and even in areas of higher elevations up to 1200 – 1500mm above sea level (Jimada, 2001). However the crop does not tolerate water logging, which causes rotting of the rhizomes. In regions with a light rain fall of 750 – 1000mm, it is best to use irrigation and since it thrives best in closed forest regions under shade and especially where the soils is well drained and rich in organic matter, then in the guinea savannah region of Nigeria the ginger variety TaffinGiwa ("elephant foot") has been considered to be the best from commercial point of view. Ginger grows well in a wide range of soils from sandy clay loam, sandy loam to even loamy sand. In all cases, the soil should be deep and freely drained. The higher the organic matter contents of the soil the better for the crop. The land should be flat to minimize the risk if erosion (FOA, 2018).

Land, Preparation and Planting

Like yam, ginger should be the first crop in a rotation as it requires a high supply of nutrient. In selecting the site, steep slopes should be avoided. Bush clearing and burning need to

be done in February and March. Burning is necessary in order to remove the large volume of trash and minimize weed growth (Danladi *et al*, 2017).

Where possible, materials for mulching may be obtained from the trash before burning. A common practice in the guinea savannah area is to plough in the grass as green manure towards the end of the rainy season (or dung or farmyard manure should be incorporated when available) (Danladi *et al*, 2017).

Proper seed bed preparation is very important in ginger cultivation. Ploughing and harrowing encourage the proliferation of ginger roots for maximum exploitation of soil nutrients and moisture. No advantage has been shown in planting ginger on ridges rather than on flats. In planting on flats, however, the bed should be raised to avoid water logging. The size of beds may be varied according to choice but sufficient space should be left between the beds to allow for the easy flow of runoff water. Therefore a good soil tilt is required for production of well-shaped rhizomes (Njoku et al., 1995).

Planting

Ginger intended as seed for the following season is left unharvested in the ground. The plot containing the seed ginger (pieces of rhizome used for propagation) should be heavily mulched with grass at the end of the rains when all the leaves have dried up. If the ginger which is intended for planting is lifted well ahead of planting time, it should be stored in a well-ventilated shady place on a layer of sand and then covered with grass.

The rhizome is part of the plant from which ginger is propagated. Planting may be done directly into the field without raising plants in nursery (Ahmed, 2018). Ginger matures in 7 – 8

months after planting. It is therefore necessary to plant it early enough to enable the crop to complete its life cycle before the onset of the dry season. Planting should be done as soon as the rains are steady, usually April/May, early planting is necessary for high rhizome yields. In conventional method of planting, clean ginger rhizomes are cut into pieces or set, each having at least two viable buds or eyes and weighing about 10 – 20g. The seed sets are placed in shallow holes about 5cm deep and at a spacing of 20cm X 20cm and then covered with soil. Depending on the set weight used 2.5 to 5.0 tonnes of seed may be required to plant as a hectare. Without any fungicide dressing, the seed piece can be stored for up to seven days after cutting before planting (FOA, 2013)

Fertilizing and Mulching

To maintain soil fertility, it is necessary to return to the soil at least those nutrients lost through crop removal and erosion. Ginger has a high nutrient demand. Organic manure such as green manure compost, wood ash or farm yard manure should be applied where available. Such sources are important for improving the water and nutrient holding capacity of the soil. Ginger benefits from a liberal application of manure; it should be applied at the rate of 7.5 tones before cultivation. In the absence of farmyard manure, nitrogenous fertilizers at the rate of 50kg should be applied in two doses, when the plants have established and six weeks after (Mbanaso et al., 1985). As ginger has shallow roots and close spacing implies that the roots are spread all over the plot, broadcasting the fertilizer is recommended because it saves time and labour. Half the nitrogen is mixed with the potassium and the phosphorous and applied shortly after planting. The remaining half is applied between 12 and 14 weeks after planting. Application of fertilizers during the period of heavy rains should be avoided, as much of the nitrogen is lost through leaching.

Mulching is a very critical factor in ginger production. Mulching is a mixture of wet straw, leaves, etc spread on the ground to protect plants or retain moisture. Heavy mulching is a requirement for a good crop of ginger. Mulching enhances early growth. Grass mulch is recommended as ideal for ginger growth and should be done immediately after planting, at least within 48 hours. Mulching has a beneficial effect of moderating the soil temperature, which needs to be maintained in the range of 30^0C to 32^0C during the first three months after planting for good ginger growth. This is achieved by mulching to a thickness of 5cm with material that can last long. Mulch materials which decay fast are not effective. Apart from moderating the soil temperature, mulching conserves soil moisture, suppresses weed growth, checks soil erosion and help to build up soil or organic matter on decay. Ginger is known to tolerate some shade and it has been grown successfully in oil palm plantation (Danladi *et al,* 2017).

Weed control

Compared to other root and tuber crops, the growth of ginger is initially slow; hence the young plant is unable to compete with aggressive weeds. Uncontrolled weed growth in ginger plots may reduce rhizome yield up to 76% compared with weeded plots. The critical period for weed removal in ginger is 8 – 16 weeks after planting.

Pest and diseases

The two important pests of ginger are shoot borers and root knot nematodes. Shoot borers bore into the shoot and damage it. Diseases and pests of ginger are rare when ginger is grown in fertile soils. However, high relative humidity and low soil fertility predispose the crop to the attack of leaf spot disease. This disease manifests itself in the appearance of numerous circular

yellow spots on the leaves. Advanced stages of the disease may tear the leaves into shreds and finally lead to premature death of the plant.

Other diseases like Fusarium, yellow and soft root are rare. There is as yet not known field pest of ginger of economic importance. Although the root knot nematode is said to be a common pest of ginger, its occurrence in Nigeria has not yet been established (Kathryn, 2013)

Harvesting, yield and storage

Ginger is generally mature when the leaves are senescent, yellowing and dying. Dry matter accumulation in ginger reaches peak at 7 – 8 months after planting. The crop may therefore be harvested at 7 – 8 months after planting. Delay in harvesting the crop increases fibre content and hence reduces the quality of the ginger. In West Africa, the harvest period is normally form November to the end of April for planted ginger. Harvesting may be done manually by carefully lifting the ginger with digging forks, hoe or other suitable implements to expose the rhizome (Kathryn, 2013).

When ginger is planted early and properly managed, high yields may be expected. Computations carried out from a bench mark survey in 1994 indicate that a farm plot yields in Nigeria may vary from 55tones in Kaduna state to 45 tonnes in rivers state (Factfish, 2013).

Storage

Most of ginger rhizomes are processed for trade after harvesting. Therefore it should be split and dried soon after harvesting, after removing seed stock for the next planting season. Storage of small quantities of rhizomes can be done in covered pits, quantities are best stored in

heaps under tree shade and covered with dry grass or in well ventilated huts. The heaps should be sorted periodically to remove rotted rhizomes (Mbanaso et al., 1995).

Ginger can also be stored in stand beds in the cool corner of rooms. In the absence of disease infestation, the crop could be left ccccccccccc in the field for storage. In such situation a thick layer of dry leaves or grass is placed over the unharvested area to prevent the drying up of unharvested area and rhizomes respectively (Ndanmadu and Marcus, 2013).

Processing and utilization

Nigeria ginger is marketed internationally in split dried form. Primary processing of ginger implies splitting and drying it to a moisture content of 10% - 12%. The drying process is done in such a way that the volatile constituents of ginger remain intact. Traditionally, this is achieved by manually splitting the rhizome in two, down its length and drying in the sun over 5 – 10 days. The hot, dry season (November to February) is the best period of the year for drying. Care must be taken to ensure that ginger does not develop mould in the process.

2.5 Economic Significance of Ginger

The economic significance of this agricultural product cannot be overemphasized. Agriculture being the main stay of any nation especially Nigeria should not be neglected. Ginger can be developed into giving the country high returns in foreign exchange earnings apart from other products in the agricultural sector (Yakubu, 2007).

The problem of unemployment can be reduced to a meaningful level if high investment is made into its production; many farmers will spring up, hence improving sources and means of livelihood of the substantial population that goes into its production. It is of high importance to

bring Nigeria to its rightful place in the production of ginger as that will greatly reduce the countries over dependence on oil, when this product is fully developed and produced on a large scale. But inability of government to put in place adequate measures necessary to boost ginger production had been the problem of reduction in the ginger production which this research attempt to offer suggestions for improvement (KADP, 2000).

In reality, agricultural activities are very important, therefore, government needs to improve this sector which is lacking proper attention, bearing in mind that it provides raw materials for the teaming industries that are directly or indirectly involved in processing of agricultural produce.

2.6 Uses of Ginger

Ginger enters the world market in three major forms. The fresh, dried and preserved ginger. In addition to these forms, the dried ginger may be processed into essential oil, spice, and oleoresin and ground ginger fresh ginger is usually only eaten in area where it is produced although it is possible to transport fresh root overseas both mature and immature are consumed as a fresh vegetable. Dried ginger spice is produced from the mature rhizomes. As the rhizome matures the flavour and aroma becomes much stronger. Dried ginger is exported, usually in large pieces which are then ground into a spice in the country where it is used dried ginger can be grounded and used directly as a spice and also for the extraction of ginger oil and ginger Oleoresin. While preserved ginger is only made from the immature rhizomes. Most preserved ginger is exported. Hong Kong, China and Australia are the major producers of preserved ginger and dominant in the world market. Making preserved ginger is not simple as it requires a lot of care and attention to quality, only the youngest, most tender stems of ginger should be used.

The various forms in which ginger is available are by no means always substitute for one another, unless further processing will be undertaken. For fresh ginger, its major usage is in the area of flavouring, seasoning and garnishing of food by domestic consumers. It is also used in the preparation of sauces and prickles or taken as vegetable.

The preserved ginger which is prepared after harvest of immature rhizome (5- 7 months), is peeled and cut into pieces and impregnated with sugar syrup and sold directly to consumers. In the confectionary, preserved ginger is used in production of sweet, candies, and also incorporated in cakes, fruits salads, yoghurt and ice cream.

The dried form of ginger which gives birth to three other products (essential oil, oleoresin and grind ginger) is the main form in which ginger enters the international market. It is often grounded before use and applied mainly as flavouring material in the food industry. In the food industry ground or dried is used for local curry powder and spice for "suya" (roasted meat) business. In the baking industry, ground ginger can serve as flavouring sourced in production of ginger biscuits, ginger cakes and ginger bread. However this usage in the industrial flavouring material has reduced due to the growing popularity of ginger oil and ginger oleoresins.

Ginger oleoresin demands are now on the increase from manufacturers of baked products, meat products, sauces and spice blends and carbonated beverages. In the pharmaceutical industry, oleoresin is reported to be of great use especially in throat lozenges. It is also used in preparation of fruit drink and ginger.

Ginger oil on the other hand is an extract that possesses the characteristic aroma of the specie but lacking in pungency. The main usage of this product is in the confectionery, beverages and baked products. There is also some minor use of ginger oil in the perfumery industry.

In Nigeria, the mandate given to FHRO and NCRCRI Umudike to research into the utilization and processing of ginger is reported by (Jimada, 2001) to be opening a new area of earning hard currency. This can only come true if the government gives adequate attention to this research area. Even if not for export of the products, but at least, self-sufficient usage. After all, Nigerian oleoresin can compete very well in the world market because of its strong pungency and aroma. (Jimada, 2001).

2.7 Medicinal Use of Ginger

The medical history of ginger is extensive. Ginger has played an important role in Chinese, Indian and Japanese medicine. It has developed a reputation in the treatment of many gastrointestinal disorders and is often promoted as an effective herbal antiemetic. It has long been believed to possess anti-inflammatory cholesterol lowering and anti-thrombotic properties. Today ginger is perhaps the most popular in the United States of America in treating nausea and vomiting associated with motion sickness. (Samoa/sector studies, 2005).

Antiemetic Effects

One of the most popular uses of ginger is to relief the symptoms of nausea and vomiting associated with motion sickness, surgery and pregnancy. Clinical trials support the efficiency of ginger as an antiemetic agent (Samoa/sector studies, 2005).

Ginger is a Powerful Cancer Fighter

While ginger helps common illnesses, its positive effect on more serious health conditions cannot be disregarded. One such serious health condition that ginger has been known to help treat for years is ovarian cancer. The University of Michigan Comprehensive Cancer Centre research that ginger can also destroy ovarian cancer cells. What's more, they found that ginger triggered two types of cell death – apoptosis and autophagy. "Apoptosis…results from cancer cells essentially committing suicide. The other type of cell death, called autophagy, results from cells digesting or attacking themselves."

"In multiple ovarian cancer cell lines, we found that ginger induced cell death at a similar or better rate than the platinum-based chemotherapy drugs typically used to treat ovarian cancer," says Jennifer Rhode, M.D., a gynaecologic oncology fellow at the U-M Medical School. Aside from helping to treat ovarian cancer, ginger also offers plenty of protective benefits for colon cancer. The University studied how ginger could hinder the progression of colorectal cancer cells. One trial in the *Journal of Clinical Oncology* has shown that those consuming ginger root had lower levels of colon inflammation and inflammation of the intestines, thereby helping to reduce the risk of colon cancer. Other studies have also shown that ginger could help tumor formation for those exposed to a cancer-causing chemical.

Anti-Inflammatory Properties Help with Many Conditions

As mentioned earlier, ginger possesses awesome anti-inflammatory properties. In fact, it may be what the root is best known for. The anti-inflammatory compounds responsible for significantly reducing inflammation are called gingerols. These compounds make ginger an amazing beneficial tool for various inflammatory-related health conditions.

In numerous research pieces, researchers found the compounds are responsible for reduction in pain and improvement in mobility for those with osteoarthritis or rheumatoid arthritis. In two clinical studies, it was found that 75% of arthritis patients and 100% of patients with muscular discomfort experienced relief of pain and/or swelling. In addition to pain levels decreasing, the compounds may also lessen swelling. In addition to helping those with arthritis, ginger can also benefit those experiencing other diseases caused by or fuelled by inflammation such as obesity, diabetes, Alzheimer's disease, numerous cancer types, and cardiovascular disease, to name a few.

Treating Heartburn/Acid Reflux with Ginger

Millions suffering from heartburn and indigestion might be saving a pretty penny if they gave ginger a try as a treatment for heartburn instead of the multi-billion dollar drug industry's many acid-blockers. Instead of turning to drugs, just try ginger. In a 2007 study published in the journal *Molecular Research and Food Nutrition*, researchers compared the anti-ulcer and anti-Helicobacter plyori (a bacteria linked to ulcers) properties of ginger and conventional acid-blockers like Lansoprazole, or Prevacid. Remarkably, ginger performed six to eight times better than the drugs. Rather than interfering with or removing stomach acid barrier (and thereby deactivating proteolytic enzymes and increasing risk of infection), ginger inhibits acid reflux and contains potent proteolytic enzymes.

Other Health Benefits of Ginger

1. **Cough** – In addition to the countless other ginger benefits, it is also one of the most famous natural cures for cough. The ginger has to be partially sliced and boiled and to ensure potency, should be crushed a bit before boiling. This will help to draw out the

active ingredients. Drinking ginger as a tea will ease sore throat, non-stop coughing and even congestion.

II. **Sore Throat** – As with cough, upset stomach, and headaches, tea made with ginger is also great for a sore throat. Try one of the tea's mentioned on this page, or boil a 1 inch piece of ginger root or a few slices, then add honey and/or lemon.

III. **Stuffy Nose/Congestion** – Try having some ginger tea with coconut milk and local honey. This isn't only for amazing taste; it breaks up phlegm and gives a boost to the immune system.

IV. **Upset Stomach / Improved Digestion** – Many herbs and spices are great for calming upset stomachs, and ginger is no exception. It's the logic behind giving someone who's seasick some ginger ale. Grate some ginger or pluck a few sprigs of mint leaves and steep in boiling water for a few minutes and enjoy with a spoonful of raw honey to subdue a bellyache.

V. **Headaches/Migraines** – Herbs like peppermint, cayenne pepper and ginger can be beneficial in the treatment of headaches and migraines. Ginger is especially useful to combat the nausea that often accompanies migraine headaches. To use the 3 herbs together in tea as a natural pain reliever, mix a one inch piece of ginger with a teaspoon of dried peppermint and a pinch of cayenne in boiling water. Allow the mixture to seep for 15 minutes before drinking. Sweeten only with honey or stevia.

VI. **Toothache** – Also among health benefits of ginger, using the spice as a home remedy for toothaches is something that has been passed down from generation to generation. Many people even experience immediate relief from the tooth pain. Try rubbing raw ginger into the gums or boil the ginger root, letting it cool and using it as a mouth rinse.

VII. **Pain** – In addition to helping treat pain associated with inflammation (joint pain), upset stomach, sore throat, and toothache, ginger can also help with muscle soreness. The compounds gingerol, shogaol, and zingerone found in ginger are more effective than drugs for inflammation drugs known as NSAIDS, according to a study published in the *Journal of Pain*. Try some ginger tea after a workout, and if it doesn't work, try some other natural pain relievers.

In conclusion there has been no report of significant side effect or severe toxic reactions following the consumption of ginger in usual therapeutic doses. This fact and the use of ginger for thousands of years by many different culture attest to its safety. However, recent studies have demonstrated the presence of potent proactive compounds in ginger that could cause adverse effects. For instance, high doses of ginger could result in significant inhibition of blood platelet aggregation. Accordingly, its use as a postoperative treatment of nausea and vomiting should be cautioned. Also the presence of potent cardio and pressor compounds could potentially complicate certain diovascular conditions such as hypertension, (Samoa/sector studies, 2005).

Market and Marketing of Ginger

A market, according to Yerkes (1994) is both the field of trade or business and the demand for a commodity. However Kohls and Uhl (1990) defined a market as an arena for Organizing and facilitating business activities and for answering the basic economic questions what to produce, how much to produce, and how to distribute production. By this, ginger markets connote its demand and supply in society.

Riyan (1980) defined marketing as a bridge between production and consumption encompassing all the activities performed in order to get goods and services into the hands of

consumers. In other words, according to him, marketing is regarded as the activities involved in recognising consumer needs, developing products and services to satisfy these needs and creating and then expanding the demand for these products and services.

In general, food marketing, according to Kohls and Uhl (1990), is the programme of all business activities involved in the flow of food products and services from the point of initial agricultural production until they are in the hands of the final consumers.

Marketing in general, consist of those businesses or activities of getting the product or commodity to the hands of consumers without being impaired. If marketing a crop is to be achieved. Such crop must be made available in the market in a form needed by the consumers. Ginger is marketed in various market centers in southern part of Kaduna state. What is not known in respect of these domestic markets is the statistics on the volume of production, distribution and consumption. Lack of these basic information poses serious constraint on future plans regarding production, processing and utilization in the country, Jimada, (2001) reported that if production is to be profitable, it must be directed to serve specific market requirement. Types and varieties of ginger produce in the market depend on incentives given to producer and taste of the consumers.

Almost all the ginger produced domestically goes into the world market through exportation. Cultivation of ginger started in 1927 as reported by Gibbon, (1953), but its exportation started just before the Second World War (Anand, 1982). The Northern state Marketing Boards (NSMB), an off shoot of the former West African Produce Control Board was given the statutory monopoly of marketing of ginger. All ginger sales were therefore made to the board which also handled all aspect of the export of the commodity. Following the

reorganization of the marketing board in 1977, the Nigerian Groundnut Marketing Board (NGMB), took over the responsibility of ginger marketing. As part of the reorganization, the board no longer had monopoly of both internal and external marketing of the commodity. But producers became free to market all their produce to other buyers" apart from the board. When ginger marketing came under the mandate of the Nigerian Groundnut Board (NGB), export rose again to 5.823 tonnes in 1977, Ezeh and Asumugba (1988) reported that Nigeria recorded zero export of ginger in 1978, 1980 and 1981. This they explained could probably be due to the fact that the government at the time paid little attention to encouraging exports. Rather, massive importation of food commodities was the order of the day.

Ginger is a useful crop recognized by the market. Although the regular supply of the commodity in some local markets is in rapid progress, the crop will be greatly recognised if more farmers engage in the farming and marketing of the crop.

If the use and importance of ginger is recognised by government, it can draw attention of researchers to find ways of improving and encouraging its production and other investment on the produce.

Another problem is connected with the activities of the middlemen. Fluagu and Ugwu (1988) reported that the former groundnut Marketing Board offered a comparatively low price to farmers for their ginger. For instance, the board paid #800 per tonne for split ginger in 1985 season whereas farmers could get up to #1,200/*tonne* in the open market. This situation could also encourage smuggling of ginger across the boarder.

Ginger marketing, like those of other crops, suffers from such limitation as lack of market intelligent service, poor communication systems and inadequate marketing facilities (Eluagu, 1988).

The problem of processing of ginger into products has now become the most important aspect of these problems that need to be tackled. If the full economic advantage of the industry will be enjoyed. This is because the international trade has moved away from ground ginger towards the use of ginger oil and oleoresins.

Ginger oleoresin: this is pure solvent extract, used mostly in the pharmaceutical, cosmetic and food industries.

Sterilized ginger spice: this is a by-product from the extraction process of ginger oleoresin which has been subject to chemical and hot treatment. It is processed to give off a pleasant fragrance and is easily digested as tonic food. It is used for seasoning all sorts of meals and soups. It can also be applied to already prepared meals to taste.

Concentrated ginger tonic: this product is blended with the honey and ginger. Oleoresin is a combination of broad spectrum medicinal value raw materials. The product may be helpful to people suffering from cold influenza etc. (Belphins handbook). Other products being produced by the company includes ginger juice, instant ginger tea and ginger wine.

2.8 Concept of Poverty

Though poverty is a universal phenomenon like any other concept in social sciences, it has not lent credence to universally acceptable definition. Thus a survey on any literature on the subject of poverty reveals pluralism of contending view point.

Olaitan (2005) rightly noted that despite the fact the most people are familiar with the term "poverty" and it numerous definitions, the understanding of the concept is extremely complicated, and some people believe that poverty resulted from lack of adequate resources on global level resources such as land, food, and building materials that are necessary for the well-being or survival of the world's people. Several scholars have provided useful definitions of the concepts.

Poverty from the perspective of United Nations Development Programmes (UNDP 1995) refers to the "denial of choices and opportunities for a tolerate life" it is view by the (Ajakaye and Olomola 1999) as a living condition in which an entity is faced with economic, social, political, cultural and environmental deprivation.

Oladunni(1999) define poverty in terms of insufficient income for securing the basic necessities of life such as food, potable water, clothing, and shelter. At international level it is measured in terms of indicators such, as Gross Domestic products (GDP) the Gross National Product (GNP), capital output ratio, Human Development index (HDI) etc.

To be poor is to be hungry, to lack shelter and clothing to be sick and not cared for, to be illiterate and not schooled. Poverty is thus a situation, a condition of human existence where resources for meeting basic human needs are extremely limited or inaccessible (The world Bank 2001).

The United Nations Development Programme (UNDP 2003) refers to poverty as a human condition characterized by hunger and malnutrition, poor health. Lack of access to safe drinking

water and sanitation, lack of participation in education, lack of marketable skill, insecurity and vulnerability.

What become obvious from the foregoing is that poverty is a multi-dimensional concept and its definition could be culturally and geographically specific depending on the particular society one is dealing with due mainly to variations in the society's welfare basket (Igbinedion and Igbatayo 2007).

Relative poverty

This refers to the situation where an individual or a household's income is low compared with the average incomes of the population in the society being considered.

Poverty line

This is the value of income or consumption necessary for a minimum standard of nutrition and other necessities. Automatically it is the cut off living standard below which a person or consumption of individuals household or group in a given society.

Poverty Trap

It is a situation where a person is not better off or even worse from moving from unemployment into a job or from one level of income to another.

Causes of Poverty

According to Igue, (2008) the causes of poverty in developing countries had been identified in development literature as hinging on adverse international developments world recession, series of economic reforms undertaken by these countries and crushing burden of foreign debt. He added however, that the fundamental cause of poverty domestically; include

inadequate production and income, difficult access to employment opportunities, poor quality of labour force, low level of technology, inefficient use of resources and lack of access to credit facilities and other productive resources.

Many people consider poverty as simple lack of income. Others extend the concept to lack of education and health facilities. However as highlighted in (2000) world development report Nobel prize winner AmartyaSen in World Bank (2002) emphasize a much broader cause of poverty as also;

I. Lack of voice: people need awareness to express their needs or obtain redress.
II. Lack of Empowerment: people need the resource and authority to take charge of programme meant for their benefit.
III. Lack of good governance: people are worse off when officials are corrupt, unresponsive to the local demands and uncountable.

According to Smith (2000) corruption and centralization, of political powers is disproportionately centralised, instead of having a network of political representative, distribute equality throughout society, politicians lack sufficient knowledge, about content to design effective and appropriate policies, corruption often accompanies centralization of power when leaders help themselves with public money and poverty reduction program.

Welfare and communal crises also contribute to a more entrenched poverty, this is because the resources meant for fighting poverty is diverted for maintaining peace and security, people become stranded during the planting and harvesting period of their farm products, this

could be seen in the case of Tiv and Jukun crisis (2001-2002) in Taraba state, the (2011) crisis between local farmers and Fulani cattle rearers in Guma local government area of Benue state.

Poverty Situation/ Trend in Nigeria

Nigeria emerged from colonial statue as a poor country (National Bureau of Statistics 2005). Poverty in Nigeria is multi-faceted, multidimensional, and multi-disciplinary. The Nigeria economy until recently has been characterized by the paradox of growth without poverty reduction and the trickledown effect of growth on the poor, slow responses of government to the endemic and persistent problem of poverty and poor governance.

Although historically analysts tend to blame the major causes of Nigeria poverty situation on her colonial experience, but it is expected that all the errors or damages of colonialism should have been corrected within her fifty-six years of independence. The causes of poverty in Nigeria can be totally blamed on Nigeria herself. Several factors within Nigeria have been advanced by analysts to be responsible for rural poverty. This multiple causation is rooted at leadership level. The major causes of poverty in Nigeria since 1984 are;

i. Lack of vision on the part of the leaders and their high level of greed for wealth accumulation which have affected the implementation of poverty alleviation programmes.

ii. The above have manifested in struggle for power electing rigging corruption exploitation, artificial scarcity of resource devaluation of naira mismanagement of resources and lack of investment.

iii. These attitudes have resulted in high rate of illiteracy, armed robbery, indiscipline, unemployment, HIV/AIDS, high population rate, child abuse and labour material and infant mortality.

iv. Neglect of agricultural sector (major sector of the economy) inadequate supply and high cost of agricultural input.

v. High cost of education and lack of social amenities (Njoku, 2004, Dike 2002, Muduagiwu 2000).

Concept of Poverty Alleviation

Ogundipe (1999) sees poverty alleviation as a conscientious effort at handling the economic vices of poverty, to him poverty alleviation programs can only be successful where careful attention has been made to design issues such as the forms of poverty to be addressed, identifying the possible approaches to be adopted to determine how the intended beneficiaries are to be identified.

The poverty situation in Nigeria is quite disturbing both qualitative and quantitative measurement attests to the growing incidence and depth of poverty in Nigeria in spite of the human and physical resources the country is endowed with. This situation has given both government and the civil society serious concern as it constituted a stumbling block in the way of development (Aderonmu and Ijalbubu 2010).

The concern over poverty and needs for its reduction as a means of improving the standard of living of the people, especially of the rural people has led to the establishment of various institution and programmes with over – riding objective of broadening the opportunities available to the poor and ensure that every Nigerian has access to the basic needs of life such as

foods, portable water, clothing, shelter, basic health services and nutrition, basic education and protection with the overall goal of improving living condition for the poor (Ogunlela and Ogunbile 2006).

Obadan(2003) opined that, in the light of governments concern for poverty alleviation, numerous policies and programmes have been designed at one time or another if not to meet the special need of the poor at least to reach them.

Poverty Alleviation in Nigeria

Government efforts at computing the menace of poverty actually started immediately after the attainment of independence in 1960. The initial attention was focused on rural development and country planning as a practical means of dealing with the problem (Oshewolo, 2010). This effort failed due largely to poor implementation of these programmes and this has been the precursor to most of the present cause of poverty in Nigeria (Guba, 2006).

Determined to combat poverty, the government of General OlusegunObasanjo came in with the Operation Feed the Nation (OFN) in 1976. The programme delegated university student to the rural areas to teach rural farmers how to use modern farming tools to improve on their farming activities as a means of exchange productivity, farmers' income, food sufficiency and as a mechanism for the poverty reduction among the farmers (Aigbokhan, 2000). This programme yielded animal fruit because the poor were wrongly targeted (Oshewolo, 2010).

The Green Revolution Programme was introduced in 1979. The objectives of this programme were to reduce food importation while boosting local food production. In theory the

programme was a noble one. But like others before, it had nothing to show after quipping billions of naira (Aigbokhan, 2000).

Oshewolo (2010) corroborated this and poor, the influential people cashed into the fortune of acquiring land for the purpose of obtaining grants and loans to do green farming. The programme ended in1983 and was replaced with the Go Back to Land programme by General Buhari. The programme was as bad as the previous one (Aigbokhan, 2000).

The pre- SAP programme were mostly designed to take care of objectives, such as employment generation, enhancing agricultural output and income and stemming the rural urban migration tide which greatly attributed to raising poverty levels. While the Green Revolution and Operation Feed the Nation (OFN) were geared towards improved agricultural productivity. The low cost housing scheme was a means to address the housing problem in both rural and urban settling in Nigeria (Oshewolo, 2010).

The advent of the structural Adjustment programme in 1986 brought out more forcefully the need for policies and programmes to alleviate poverty and provide safety nets for the poor. This emphasis arose from awareness of the unintended negative effect of the Structural Adjustment Policies on the vulnerable groups in the society. Thus, as a result of continuous deterioration of living conditions in the late 1980s, several poverty alleviation programmes were designed and came on board intended to impact positively on the poor (Obadan, 2003).

Omotola (2008) maintained that during the Structural Adjustment Programme (SAP) era, which witnessed the worsening of the economic and political situations of the country, the government equally made some attempts to fight the scourge of poverty. Some of the

programmes and institutions put in place by the government in her bid to reduce poverty include Directorate for Food Roads and Rural infrastructure (DFRRI), National Directorate of Employment (NDE), Better Life programme (BLP), People's Bank of Nigeria (PBN), Community Banks, Family Support Programme (FSP) and the family Economic Advancement Programme (FEAP) (Ajegi, 2001 and Garuba, 2006).

The directorate of Food, Road and Rural Infrastructure, (DFRRI) was created as an integrated approach to rural development. It was designed to act as a policy catalyst for the development of the rural areas of the country with particular emphasis on the provision of water and the construction, rehabilitation and maintenance of an effective rural road network.

The National Directorate of Employment (UDE), on the other hand is a skill formulation and credit granting scheme with consequential role of accelerating entrepreneurship development with the philosophy of self-enterprise and employment. The Better Life Programme (BLP) aimed at complementing the existing federal policies to develop the rural areas with objectives of motivating and stimulating rural women towards achieving better and higher standard of life, sensitise the populace to the plight of female education.

The People's Bank of Nigeria (PBN) and community Bank were established and spread all over the nook and cranny of the country, to provide credit to those engaged in legitimate economic activities but cannot access loan from orthodox banks, due to their inability to provide collateral security and credit based on self recognition respectively (Obadan, 2003).

Until the inauguration of poverty Alleviation programme Development Committee (PAPDC) by the Nigerian Government in 1994, all efforts at poverty alleviation programmes and

strategies were not crystallised and consolidated within the natural overall development objective (Obadan, 2003). Subsequently the 1999 World Bank report on the achievement of poverty alleviation programme; prompted Nigeria government to review the existing poverty alleviation programme, schemes and institution with a view to harmonizing and improving on them, thus there was a renewed emphasis in 1999 to check the worsening poverty situation.

In the light of this the government launched the Universal Basic Education (UBE) Programme in 2000, the poverty Alleviation Programme (PAP) was introduced as an interim measure to address the problem of rising unemployment and crime wave, particularly among the youths, with the ultimate aim of increasing the welfare of Nigerians. Determine to make a dent on poverty, the government set up three presidential panels, communities to harmonise, streamline and rationalise existing poverty alleviation programme and institution and coordinate, monitor the implementation of the relevant schemes and programmes, (Obadan, 2003). This culminated in the introduction in early 2001 of the National Poverty Eradication Programme (NAPEP) and the establishment of National Poverty Eradication Council (NAPEC) which was aimed at the provision of strategies for eradication of absolute poverty in Nigeria and co-ordination of poverty reduction related activities of all ministries, parastatals and agencies so that the objective of policy continuity and sustainability are achieved, respectively (FRN, 2001).

In spite the expressed concerns of past government and the plethora of programmes and policies that have a bearing on poverty, the incidence and scourge of poverty have worsened over the years. The implication of this is that there had been abysmal failure of these programme and policies (Obadan, 2003).

Algbolhan (2000) attributed the failure of the poverty alleviation programmes and policies to lack of consistency, continuity and non-implementation of government policies to the later, and maintained further that different administrations in Nigeria have adopted their own alleviation programme instead of continuity and improving on the previous poverty alleviation programmes and policies.

These poverty alleviation programmes also failed to address the poverty situation in Nigeria because of political interference. Instead, of being executed with the aim of benefiting the victims of poverty, the programmes were seen as avenues for rewarding political access. The inability of government to adequately mobilise the victims of poverty, ensure their full participation in the identification and design of the programmes, as well as guaranteeing their sustainability have also contributed to their failure of these programmes (Ajegi, 2001).

2.9 Theoretical Link Between Ginger Production and Poverty

Poverty is a living condition in which an entity is faced with economic, solid, political, cultural and environmental deprivation (Ajankanye and Olomala, 1999). It is a state of involuntary deprivation which a person, household, that grips a person or nation and throws into poverty trap where escape from the vicious circle of insufficient income for securing basic goods and services, lack of income generally coincides with inadequate social condition (Lemeny and Square, 1996; Ajakaiya et al., 2001; and Odumoso, 1999).

There is a serious link between income earned and the basic goods and services enjoyed. Increase in income is secured via economic growth, especially growth in the case of a state like Kaduna. Theoretically, there must be an unbalanced agricultural growth in support of ginger production. If poverty must be reduced, the argument here is that increased ginger production

will increase the overall 70% population of Kaduna state that are farmers and other related activities and hence, increase, in the quality and quantity of the basic amenities, which in turn improves the overall standard of living for the populace.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

Research methodology refers to the entire scientific and logical steps or methods taken to achieve the study aim and objectives. In other words, it is refers to all the materials used and the methods adopt to achieve the outlined study objectives. This is possible through the gathering and collection of data which will be processed or analyzed to obtain information used in decision making. For the better understanding of this research, its methodology is discussed below.

3.1 Research Design

This research work will empirically study ginger production and poverty alleviation in Zango kataf local government area of Kaduna State to capture an unbiased sample, the researcher will employ sample random sampling technique and oral interview in obtaining information through a structured questionnaire.

3.2 Study Population

The study population comprises of only ginger producer in Zango kataf local government areas, four (4) wards were selected for the study, a pre-survey disclosed that gidan jatau has an estimated population of about 229 ginger farmers, Gora has an estimated population of 136 ginger farmers, kamantam has an estimated population of 321 ginger farmers, and Ikulu with an estimated population of 147 ginger farmers.

3.3 Types and Sources of Research Design

The kinds of data required to address the working objectives of the study include; data on ginger production, its importance, prices of ginger in the study area, socioeconomic characteristic of the population in the study area. The study is based on primary data sources.

Primary Sources of Data

The primary data were derived from questionnaire administration and in-depth interview.

- **Questionnaire Administration**

Questionnaire is a major instrument used in obtaining primary data. It is a list of questions (usually printed) to be answered by people in the study area, so as to get facts or information about a particular problem.

- **In-Dept Interview**

Aside from questionnaire administration, face to face interview was organized among the respondents. Those interviewed comprised of town chiefs and the farmers in the study area. They were interviewed on the importance of ginger farming to poverty alleviation in the community, and also the problems encountered in ginger famine.

3.4 Questionnaire Design and Administration

Questionnaire is the major instrument used in obtaining primary data. It is a list of questions (usually printed) to be answered by people in the study area, so as to get facts or information about a particular problem.

The questionnaire that was used in this research was randomly administrated to ginger farmers in the communities. It was constructed and structured in such a way that it combines both fixed (close) respond and open-ended questions and were administered face-to-face to the respondents. The fixed (closed) response questions consist of items or question with fixed number of choices example; (YES), (NO) or ( ). While the open ended questions on the other hand consist of items or questions that give the respondents enough room to reveal their motive and express their individual preferences in the space provided.

The questionnaire that was used in this study is divided into two (2) sections, A, B. Section "A" provides data on the demographic and socio-economic characteristics of the respondents while Section "B" provides the main data needed in carrying out this research work.

A total of two hundred and eight (208) questionnaires were administrated to the ginger farmers in the study area in four (4) communities namely: Gidanjatau, Gora, Kamantan, and Ikulu. The information collected from the questionnaires was used for analysis in this research work.

Techniques of Data Analysis and Presentation

The descriptive and the inferential statistical technique were adopted in this study. The Descriptive statistical technique was employed in the summarization of the data into tabular forms and frequency distribution while the inferential statistics such as Chi-square was adopted to test the research hypotheses.

The chi-square test is an important test amongst the several tests of significance developed by statisticians. Chi-square, symbolically written as X^2 (Pronounced as Ki square), is a statistical measure used in the context of sampling analysis for comparing a variance to a theoretical variance.

As a non-parametric test, it "can be used to determine if categorical data shows dependency or the two classifications are independent. It can also be used to make comparisons between theoretical populations and actual data when categories are used." Thus, the chi-square test is applicable in large number of problems. The test is, in fact, a technique through the use of which it is possible for all researchers to test the goodness of fit; test the significance of association between two attributes, and test the homogeneity or the significance of population variance.

Chi-Square is mathematically represented as:

$$X^2 = \frac{\Sigma(O - E)^2}{E}$$

Where: O = Observed frequency

E = Expected frequency

Σ = summation

X^2 = Chi-square

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

This chapter presents the analysis of data and interpretation of findings based on the research questions as indicated in chapter one of this study. Tables and Charts were used to interpret data to make the work more explicit and easy to understand.

The chapter is divided into two (2) sections, the first section provide the demographic and socio-economic characteristics of the respondents, while second section covers the research questions respectively.

4.1 Details of Questionnaire Administered in the Study Area

The major strategy of data acquisition for the study is the questionnaire administration. Two hundred and eight (208) questionnaires were originally distributed, out of which one hundred and ninety eight (198) were filled correctly and returned. Ten (10) copies were badly filled and therefore not returned. Therefore, the analysis was based on the one hundred and ninety eight (198) correctly filled and returned questionnaires.

Table 4.1: Details of Questionnaire Administration

Community	Questionnaire Administered	Questionnaire Retrieved	Percentage (%)
Gidanjatau	57	55	27.8
Gora	34	30	15.2
Kamantan	80	78	39.4
Ikulu	37	35	17.6

Total	208	198	100

Source: Field Survey, 2019

4.2 Demographic Characteristics of Respondents

Sex Distribution of Respondents

The data obtained as regards to the sex distribution of respondents in the study area is presented in Table 4.2.

Table 4.2: Sex Distribution of Respondents

Variable	Number of Respondents				Total	Percentage (%)
	Gidanjatau	Gora	Kamantan	Ikulu		
Male	48	27	53	23	151	76.3
Female	7	3	25	12	47	23.7
Total	55	30	78	35	198	100

Source: Field Work, 2019.

The sex distribution of respondents as indicated in Table 4.2 reveals that there are more males than females in the study area. Male respondents account for 76.3% of the respondents while female respondents account for the remaining 23.7%. The distribution also varies between the four sample communities in the study area.

4.3 Age Composition of Respondents

Regarding the age composition of respondents in the study area as collected from the questionnaires is given in Table 4.3.

Table 4.3: Age Composition of Respondents

Variable	Number of Respondents				Total	Percentage (%)
	Gidanjatau	Gora	Kamantan	Ikulu		

15 – 19	10	1	8	7	26	13.1
20 – 29	8	6	26	11	51	25.8
30 – 39	16	11	23	9	59	29.8
40 – 49	21	9	19	5	54	27.3
50Above	0	3	2	3	8	4
Total	55	30	78	35	198	100

Source: Field Work, 2019.

The age composition of respondents as indicated in Table 4.3 reveals that 13.1% of the respondents are between the ages of 15 to 19, 25.8% are between the ages of 20 to 29, 29.8% are between the ages of 30 to 39, 27.3% are between the ages of 40 to 49, while 4% were 50 years and above. These findings reveal that majority of the respondents are within the active age bracket.

4.4 Marital Status of Respondents

The marital status of the respondents in the study area as obtained from the questionnaires is shown in Table 4.4.

Table 4.4: Marital Statue 0f Respondents

Variable	Number of Respondents				Total	Percentage (%)
	Gidanjatau	Gora	Kamantan	Ikulu		
Single	6	7	12	14	39	19.7
Married	46	23	59	21	149	75.3
Divorced	3	0	7	0	10	5
Total	55	30	78	35	198	100

Source: Field Survey, April 2016.

Table 4.4 reveals that 19.7% of the respondents in the study area are single, 75.3% are married, and 5% are divorced. These findings revealed that majority of the respondents in the Study area are married.

4.5 Educational Qualification of Respondents

The data collected with regards to educational qualification of respondents in the study area are given in Table 4.5.

Table 4.5: Educational Qualification of Respondents

Variable	Number of Respondents				Total	Percentage (%)
	Gidanjatau	Gora	Kamantan	Ikulu		
No Formal Education	15	9	8	11	43	21.7
Pri/Qua. Education	11	7	19	7	44	22.2
Secondary Education	25	11	41	9	86	43.5
Post Sec. Education	4	3	10	8	25	12.6
Total	55	30	78	35	198	100

Source: Field Survey, 2019

The educational qualification of respondents in the study area as indicated in Table 4.5 reveals that 21.7% of the Respondents have no form of formal education, 22.2% acquired Primary education as their qualification, 43.5% acquired secondary school education, those with post secondary school education qualification constitutes 12.6% of respondents in the study area. These finding implies that literacy rate in the study area is high.

Presentation of Data According to Research Questions

Duration of Ginger production

Information regarding the duration of ginger production by the farmers in the study area was sought for from the respondents. The information gathered was analyzed and presented in figure 4.1 below.

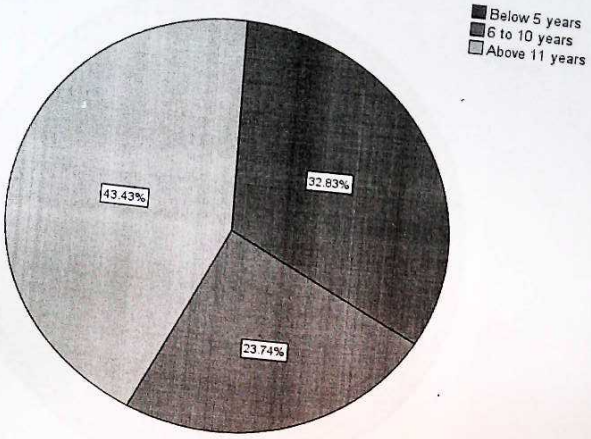

Figure 4.1: pie chart showing the duration of ginger production in the Study Area
Source: Field Survey, 2019.

The result of the analysis in figure 4.1 revealed the duration of ginger production in the study area. 43.43% of the farmers have been into ginger production for the past 11 years and above, 23.74% of the farmers have been into ginger production for the past 6 to 10 years, while the remaining 32.83% of the farmers were new into ginger production. These analyses show that majority of ginger farmers in the study area have been into the production of ginger for long.

Types of Labor use in Ginger Production

Information regarding the types of labour use in ginger production by the farmers in the study area was sought for from the respondents. The information gathered was analyzed and presented in figure 4.2 below.

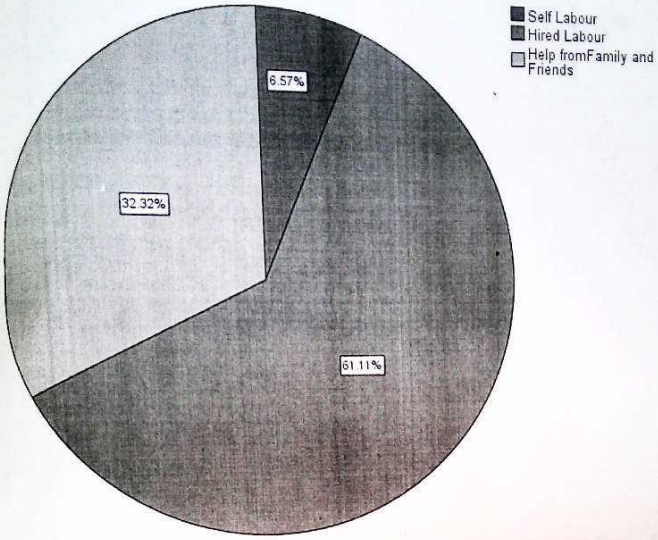

Figure 4.2: pie chart showing the types of labours used in ginger production in the Study Area
Source: Field Survey, 2019.

The result of the analyses in figure 2 revealed the types of lobour used in ginger production in the study area. 6.57% of the despondences carry out the farming activities by themselves, 32.32% of the farmers uses the help of family and friends to carried production, while the majority, 61.11% uses hired labour.

Annual income from ginger farming

Information regarding the annual income from ginger farming in the study area was sought for from the respondents. The information gathered was analyzed and presented in figure 4.3 below.

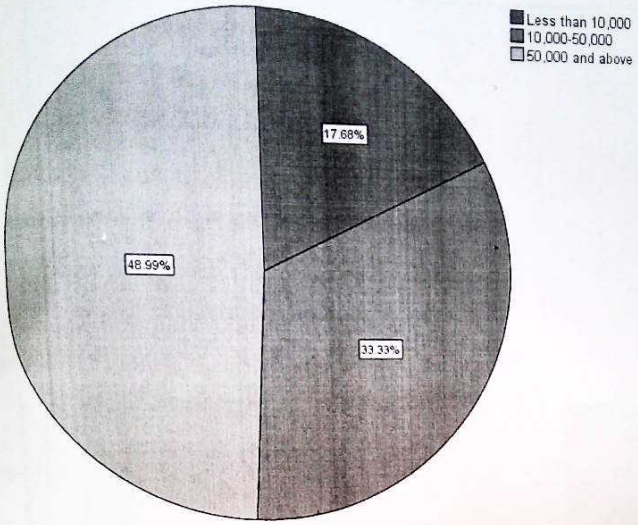

Figure 4.3: pie chart showing the annual income from ginger farming in the Study Area
Source: Field Survey, 2019.

The result of the analysis in figure 4.3 revealed that, 17.68% of the respondents earned less than ₦10,000 annually, 33.33% earned between 10,000 to ₦50,000, while the remaining 48.99% earned from 50,000 and above. These analyses show that ginger production serves as the major source of income in the study area.

Ways Ginger Production has help Alleviate Poverty

Information regarding the impact of ginger production on poverty alleviation was sourced from the respondents. The information gathered was analyzed and presented in figure 4.4.

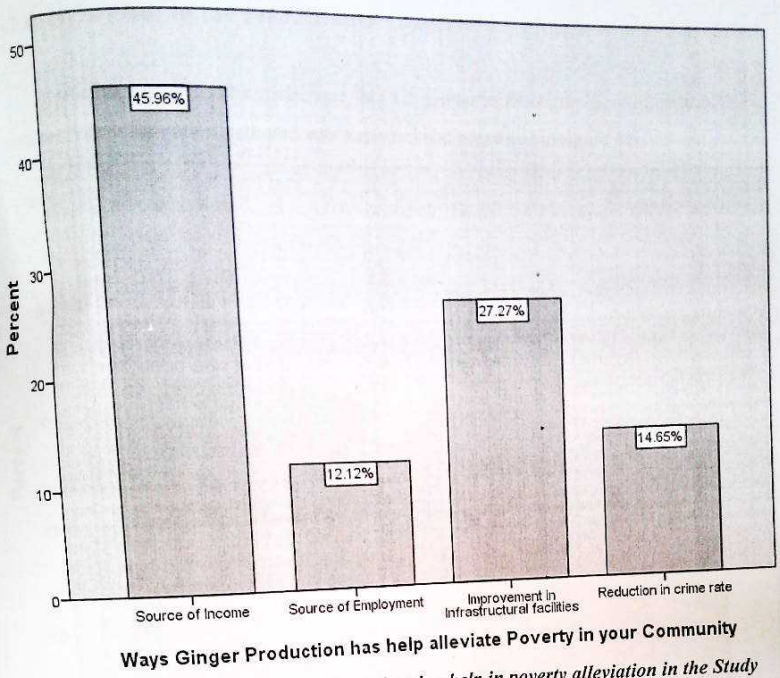

Figure 4.4: bar graph showing ways ginger farming help in poverty alleviation in the Study Area

Source: Field Survey, 2019.

The result of the analyses in figure 4.4 revealed that, 45.96% of the respondents perceived that ginger farming is the main source of income in the study area, 12.12% perceived that ginger farming serves as the main source of employment, 27.27% believed that ginger farming has help in the improvement of infrastructural facilities in the study area, while 14.65% are of the opinion that the rate of crime has greatly diminished because of people involvement in ginger farming.

The challenges faced in the Production of Ginger

Information regarding the challenges faced in ginger production was sourced from the respondents. The information gathered was analyzed and presented in figure 4.5.

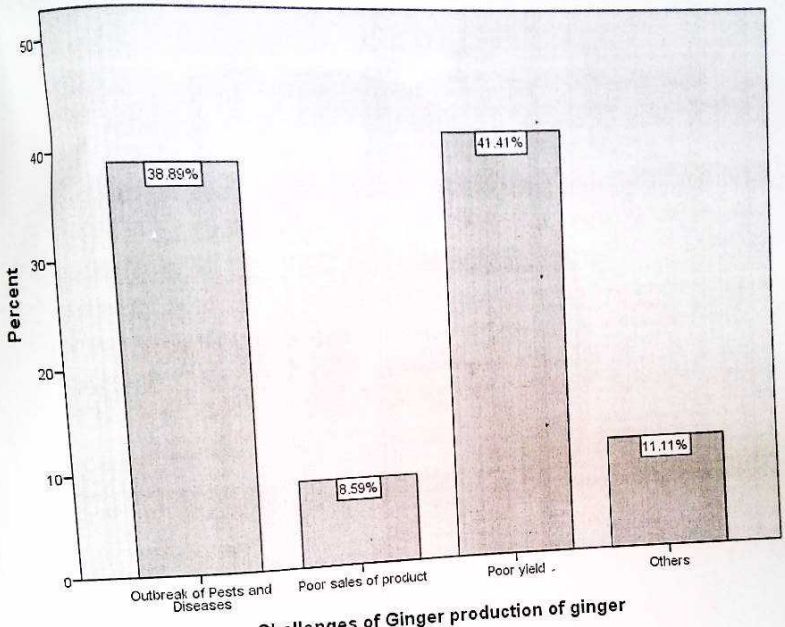

Figure 4.5: bar graph showing the challenges of ginger production in the Study Area

Source: Field Survey, 2019.

The result of the analyses in figure 4.5 revealed that, 38.89% of the respondents perceived that outbreak of pests and diseases is the major challenges of ginger production in the study area, 8.58% believed that poor sales of ginger is the major challenge of ginger production in the study area, majority, 41.41% of the respondents were of the opinion that poor yield is the major challenges of ginger production in the study area.

The Minimum average cost of Production in a year

Information regarding the minimum average cost of ginger production in the study area was sourced from the respondents. The information gathered was analyzed and presented in figure 4.6.

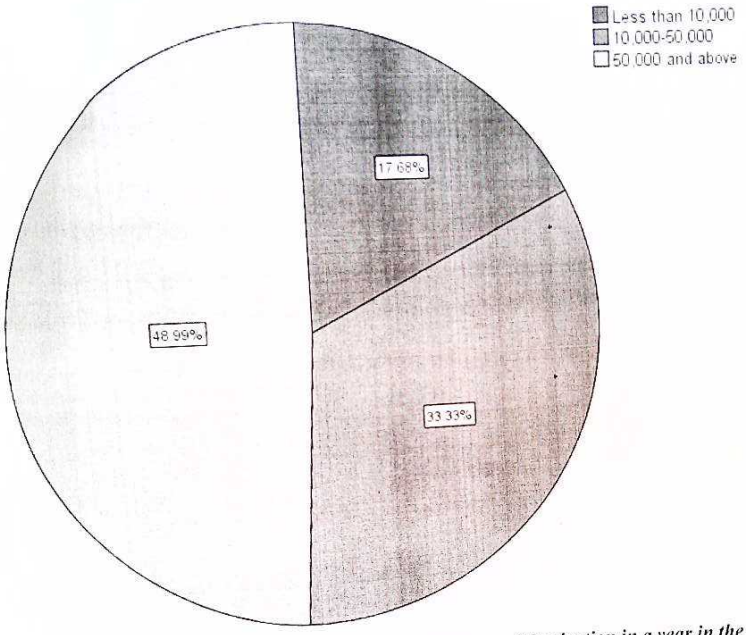

Figure 4.3: pie chart showing the Minimum average cost of Production in a year in the Study Area.
Source: Field Survey, 2019.

The result of the analyses in figure 4.6 revealed that, 17.68% of the respondents spent less than ₦10,000 in the production of ginger, 33.33% spent ₦10,000 to ₦50,000 on ginger production, while 48.99% spent over ₦50,000 in the production of ginger in the study area.

4.6 Hypothesis Verification

The study went further to test if ginger production alleviates poverty in Zango Kataf local government area of Kaduna State. Variables were therefore cross-tabulated so as to determine whether the impacts on poverty alleviation were as a result of the annual income from ginger faming. Variables such as the annual income from ginger farming was cross-tabulated with the impacts of ginger farming in the study area.

Therefore the following hypothesis was tested and the results are presented on Table 4.11.

H_0: Ginger production does not alleviate poverty in zango kataf local government area of Kaduna state.

H_I Ginger production alleviates poverty in zango kataf local government area of Kaduna state.

Table 4.6: Cross Tabulation of Annual Income from Ginger Farming against Ways Ginger Production has help Alleviates Poverty

			Ways Ginger Production has help alleviate Poverty in your Community				
			Source of Income	Source of Employment	Improvement in Infrastructural facilities	Reduction in crime rate	Total
Annual income from ginger farming	At most ₦50,000	Count	68	0	0	0	68
		Expected Count	31.3	8.2	18.5	10.0	68.0
		% within Annual income from ginger farming	100.0%	0.0%	0.0%	0.0%	100.0%
	₦50,000 - ₦150,000	Count	23	24	39	18	104
		Expected Count	47.8	12.6	28.4	15.2	104.0
		% within Annual income from ginger farming	22.1%	23.1%	37.5%	17.3%	100.0%
	₦150,000 and	Count	0	0	15	11	26

	above	Expected Count	11.9	3.2	7.1	3.8	26.0
		% within Annual income from ginger farming	0.0%	0.0%	57.7%	42.3%	100.0%
Total		Count	91	24	54	29	198
		Expected Count	91.0	24.0	54.0	29.0	198.0
		% within Annual income from ginger farming	46.0%	12.1%	27.3%	14.6%	100.0%

Source: Field Survey, 2019

Table 4.7 shows Chi Square test on whether or not the annual income of ginger farming has effect on the impact of ginger farming on poverty alleviation in Zango Katap Local Government Area of Kaduna State.

Table 4.7: Chi-Square Tests of significance level

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	145.117[a]	6	.000
Likelihood Ratio	179.649	6	.000
N of Valid Cases	198		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.15.

Findings from the Pearson chi-square revealed that at 6 degree of freedom the Asymp. Sig. (2-tailed) column is 0.000 and less than .05 level of Significant. Therefore, the observed chi-square is significant at $P \leq 0.05$ levels so the null hypothesis (H_0) is rejected. This result further confirms the Alternative hypothesis (H_1) that Ginger production alleviates poverty in Zango Kataf Local Government Area of Kaduna State. We conclude that the annual income of the

farmers in the study area have significant impact on the poverty alleviation in Zango Katap Local Government.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The aim of this research is to provide information on the production of ginger and how it can help alleviate the problem of poverty in Zangon kataf local government. The specific objectives of this study include the following to determine the economic importance of ginger production in the study area, to examine how ginger production can help alleviate poverty in the study area, and to identify the problems encountered in ginger production in zangokataf local government and measures they adopt to cope with the problem.

Based on the data collected and analysed, the study findings revealed that majority of ginger farmers in the study area have been into the production of ginger for long. 43.43% of the farmers have been into ginger production for the past 11 years and above, 23.74% of the farmers have been into ginger production for the past 6 to 10 years, while the remaining 32.83% of the farmers were new into ginger production.

Information regarding the types of labour use in ginger production by the farmers in the study area revealed that 6.57% of the despondences carry out the farming activities by themselves, 32.32% of the farmers uses the help of family and friends to carried production, while the majority, 61.11% uses hired labour.

As for the annual income from ginger farming in the study area, the findings show that ginger production serves as the major source of income in the study area. The findings revealed

that, 17.68% of the respondents earned less than ₦10,000 annually, 33.33% earned between 10,000 to ₦50,000, while the remaining 48.99% earned from 50,000 and above.

Ginger production has had a great impact on poverty alleviation in Zango Katap local government. The findings revealed that, 45.96% of the respondents perceived that ginger farming is the main source of income in the study area, 12.12% perceived that ginger farming serves as the main source of employment, 27.27% believed that ginger farming has help in the improvement of infrastructural facilities in the study area, while 14.65% are of the opinion that the rate of crime has greatly diminished because of people involvement in ginger farming.

Despite the important of ginger production on poverty alleviation, there were few challenges encountered in the production revealed that, 38.89% of the respondents perceived that outbreak of pests and diseases is the major challenges of ginger production in the study area, 8.58% believed that poor sales of ginger is the major challenge of ginger production in the study area, majority, 41.41% of the respondents were of the opinion that poor yield is the major challenges of ginger production in the study area.

Findings regarding the minimum average cost of ginger production in the study area revealed that, 17.68% of the respondents spent less than ₦10,000 in the production of ginger, 33.33% spent ₦10,000 to ₦50,000 on ginger production, while 48.99% spent over ₦50,000 in the production of ginger in the study area.

5.2 Conclusion

From the study, we can see that the annual income of the farmers in the study area have significant impact on the poverty alleviation in Zango Katap Local Government. Despite the

challenges faced by ginger farmers, the impacts of ginger production on poverty alleviation cannot be over emphasized.

The hypothesis that was postulated and tested validated that, the annual income of the farmers in the study area have significant impact on the poverty alleviation in Zango Katap Local Government.

5.3 Recommendation

The researcher was able to show that the annual income of the farmers in the study area has significant impact on the poverty alleviation in Zango Katap Local Government. However, poor yield is the major challenges of ginger production in the study area.

Based on the findings of this research work, the following recommendations are hereby made:

1. The government should provide fertilizers and insecticides that will be used to control diseases that attack ginger and also for its fertilization so as to increase productivity.
2. The Nigerian government should expand the industrial sector so that these ginger and other agricultural produce will be absorbed and further production enhanced.
3. The economy and the agricultural sector cannot strive if the infrastructure is left decayed, basic infrastructures should be put in place by the government so as to enhance the development of the agricultural sector.

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APPENDIX I

Department of Economics,

Faculty of Social Sciences,

Federal University Gusau.

Dear Sir/Madam,

REQUEST FOR COMPLETION OF QUESTIONNAIRE

I am a final year student of Economics department of the above institution; I am carrying out a research on a project topic: **Ginger Production and Poverty Alleviation in Kaduna State, Nigeria (A Case Study Of Zango Kataf Local Government, Kaduna State).**

The questionnaire is for the project research purposes only and for the preparation of project report in partial fulfillment of the requirements of Bachelor of sciences (B.Sc) degree in Economics.

I solemnly solicit for assistance in answering the questions objectively, bearing in mind that the research is only an academic exercise. I undertake that any information given would be guaranteed strictly in confidence.

Thanks for your anticipated cooperation

Yours faithfully,

SECTION 'A'

PERSONAL DATA

Please tick [ ] in the corresponding box

1. **Name of your community**.....

2. **Sex** (a) Male [ ] (b) Female [ ]

3. **Marital Status** (a) Single [ ] (b) Married [ ] (c) Divorced [ ]

4. **Age Bracket** (a) 15 -19 [ ] (b) 20 – 29 [ ] (c) 30 - 39 [ ]
(d) 40 – 49 [ ] (e) 50 and above [ ]

5. **Educational Qualification** (a) No formal Education [ ]
(b) Primary Education [ ] (c) Secondary Education [ ]
(d) Post Secondary Education [ ]

SECTION 'B'

RESEARCH QUESTIONS

6. **When did you start the ginger farming?** (a). Below 5 years [ ]
(b). 6-10 years [ ] (c). 11 and above years [ ]

7. **Indicate the types of labour you use in ginger production:** (a). Self [ ]
(b). Hired labour [ ] (c). Help from family and friends [ ]

8. **What is your annual income from ginger farming?** (a). At most ₦50,000 [ ]
(b). ₦50,000 - ₦150,000 [ ] (c). ₦150,000 and above [ ]

9. **In what ways has ginger production help alleviate poverty in your community?**
(a) Source of income [ ] (b) Source of Employment [ ]
(c) Improvement on Infrastructural facilities [ ] (d) Reduction in crime rate

9. What are the challenges faced in the production of ginger?

(a). Outbreak of pests and diseases [ ] (b). Poor sales of product [ ]

(c). Poor yield [ ] (d). Others (specify).....

10. What is the minimum average cost of production in a year?

(a). Less than 10,000 [ ] (b). 10,000-50,000 [ ] (c). 50,000 and above [ ]