

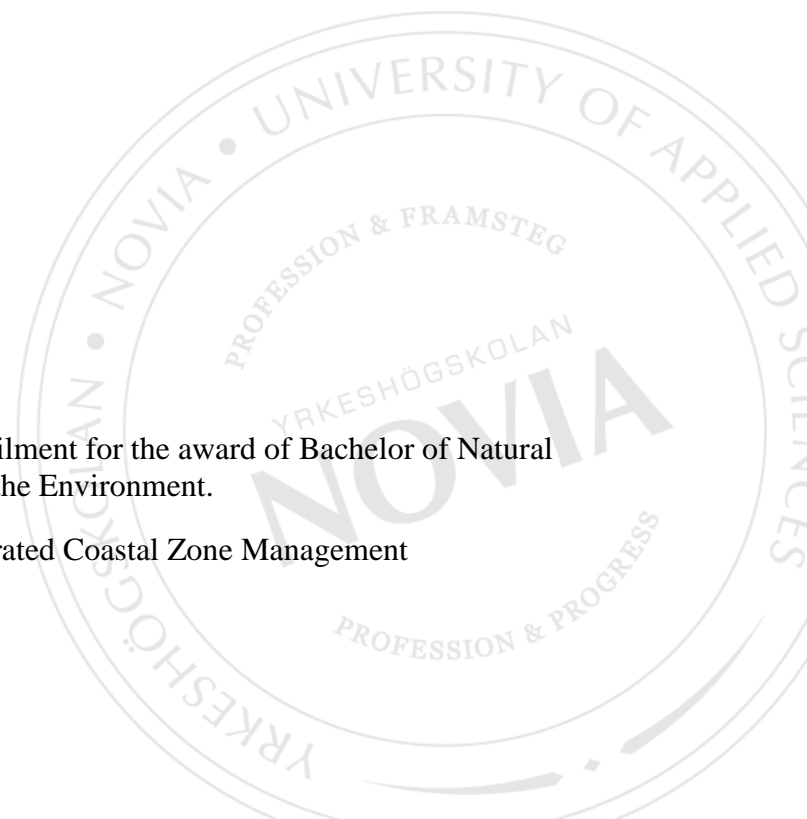
**CONSEQUENCES OF POPULATION GROWTH
ON AGRICULTURAL PRODUCTION IN
OBINGWA LOCAL GOVERNMENT AREA OF
ABIA STATE NIGERIA.**

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Degree Thesis in partial fulfilment for the award of Bachelor of Natural
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ABSTRACT

Today, millions of people in the world are without food especially in the developing world which has been of great concern as stipulated in the United Nations millennium development goal 1, sub-targets A, B and C to fight hunger, poverty and starvation across the world and ensure environmental sustainability (UNCSD, Aug, 2011) .This study investigated the consequences of population growth on agricultural production in Obingwa local government area in Nigeria. This is a survey type of research and the instrument used for this study was a questionnaire developed by me for the purpose of this study. The collected data was analyzed by the use of bar graphs arranged in columns, showing the number of agreed and disagreed responses(higher numbers in the agreed responses indicates a significant match whereas higher numbers in the disagreed responses indicates no match) to the research questions. The result of this study shows that there is a significant effect of population growth and food production based on land pattern systems in the locality as a result of pattern of land ownership, communal land ownership, individual land tenure system and land fragmentation; rural-urban migration caused by shortage of land available for farmers for food production, higher paying jobs and better educational opportunities, capital intensive methods of production lack of proper land use decrees etc. To put an end to this menace, it entails a holistic approach not only involving the affected people but also people of great concern around the world. This study has therefore suggested that:

- Land polices and its implementations should be amended in the country or create new laws that could integrate both traditional (i.e. communal and individual) land ownership and legal right of land ownership in the country.
- There should be a public enlightenment on the current trend in agricultural production (best agricultural practices/ mechanized farming).
- Government of the federation should encourage farmers by giving grants and subsidies (cash and improved seedlings)
- Ministry of agriculture and natural resources management to device means of educating farmers on the need for food security through mass media, Agricultural extension programs/workshops, internet etc.
- The government of the federation should encourage research and development activities in the area of plant and animal production for effective yield in order to boast the agricultural industry in Nigeria.

- Government should in its yearly budget, invest more in agriculture as it is an important aspect of livelihood in order to cater for the food needs of the growing population in the country.

Language: English. **Key words:** Population, population growth, Rural-urban migration, Agriculture, Agricultural production, Land tenure, Ecosystem, Arable Farm land, Land fragmentation.

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ABBREVIATIONS EXPLANATION.

UNCTAD	United Nations conference on trade and development
FAO	Food and Agricultural organization
NPC	National population Commission
UNPF	United Nations Population Fund.
UNCSD	United Nations Commission for sustainable development
UN	United Nations
UNMDG	United Nations Millennium Development Goal
UNFCCC	United Nations Framework Convention on Climate Change
UNSD	United Nations Statistics Division
IEA	International Environmental agreement
UNDP	United Nations Development Program
CTN	Come to Nigeria
US	United States
ASD	Agrarian Systems Diagnosis
IAEA	International Atomic Energy Agency
IUCN	International Union for Conservation of Nature
NAP	National Academic Press
UNU	United Nations University
NOAA	National Oceanic and Atmospheric Administration
USDA	United States Department of Agriculture
OBLGA	Obingwa Local Government Area.

1.0 INTRODUCTION

1.1 Background of the Study

In recent times, one of the major issues in the world especially in third world countries has been the alarming rate of poverty, lack of proper education and food scarcity. In Nigeria, this has been a huge problem due to increased population with fewer resources. Therefore, the need to provide adequate food for the entire population becomes a huge concern to the entire populace. This grim condition was put forward early in the history of economics by Robert Thomas Malthus (Limits to growth, 1766 - 1834) that population growth will always continue to be a problem due to the natural human reproductive urge which increases geometrically (1, 2, 4, 16, 32, 64, 128, 256, etc.) in relation to food supply which only increases arithmetically (1, 2, 3, 4, 5, 6, 7, 8, etc.) and thus could have a resultant starvation effect if left unchecked.

In recent times, this theory has been said to be criticized by other economists with many factors which Malthus did not consider when putting forward this theory (Gazu lakhotia, 2011). This has been a subject of keen controversy as he was regarded as a pessimistic economist by others. These criticisms are based on his inability to relate his theories to the history of western countries as population has failed to grow as rapidly as he predicted in these areas and production as well has increased due to technology advancements. As a result of this, living standard of the people has increased tremendously instead of falling as he predicted in his theory (Gazu lakhotia, 2011, revised edition 2012)

Secondly, (Ester Boserup, 1965) accused Malthus of basing his theory on the law of diminishing returns which is applied to agricultural production. But for the fact that he asserted that food production would not match with the high population, this has been falsified due to the increase in advanced technology and high capital investments in developed countries, Thus, Boserup proposes a "dynamic" relationship between arable and fallow land that changes in response to population density (Boserup 1965, page 13, 15 & 20).

In contrast to the Malthusian idea of 'invention-pull' population growth, Boserup (1965) rather put forward an 'invention-push' agricultural change which makes it possible to substitute technological input like the use of fertilizers in agricultural production, better seeds for production of quality foods and the use of agricultural machineries to increase food production.

Thirdly, the Malthusian theory of population compared population growth with the increase in food production alone and as a result gave no proof of his assertion that population increased exactly in geometric progression. He taught that land was available in fixed quantity and therefore food production cannot increase more than population. He failed to put into proper account the different types of agricultural production and compare them with the increase in the total wealth of a country. This on the other hand does not show that population and food supply changes with these mathematical series. Scientists did not base their support for the populace just on food production from available lands, rather they industrialize themselves by nurturing other natural resources and accumulating man-made capital equipment (e.g. airplanes, factories, cars, tools, railways etc.) which they would use in other forms of production and in exchange for food from other countries through export trades. (Gazu lakhotia, 2011)

Similarly, The Malthusian theory of population may apply to the developing world such as Africa and the Asian countries. For instance, India and China are at present in that unenviable position which Malthus feared. Grinding poverty, disease outbreak, famine, communal wars and discrimination, insufficient food supply and low standard of living. But for the fact that technology increased has helped in solving these problems especially in the area of food insecurity, these notwithstanding has been falsified by other scientists as Malthus based his theories only on the present life conditions as that time.

As the society develops in size and quantity, the demands on resources increases in both intensity and density (Population & Environment 1994, Revise edition A.A Bartlett, 1997).

In these parts of the world, society goes through a rapid development to the extent where there are concerns regarding finiteness, (total usage) of resources. In many areas, population pressure is causing sub-division of fertile lands into smaller plots thereby intensifying land use as well as facilitating rural-urban migration. Similarly, marginal lands in some areas are also brought into production. One of the most socio-economic factors in soil and water conservation is undoubtedly the issue of land tenure. Great strides have been made since 1960s in adjusting land in many of the higher potential areas in Africa. In the drier areas, most of the land is still communally owned (Oyebola, 1970). Over the past years, a purely pastoral economy has a degree of dynamic equilibrium between the people, the livestock and the land etc., the fact that all land was common, it caused no essentials for stewardship. But with rising human and livestock numbers, coupled with a decline in grazing areas due to other forms of land use, the previous dynamic equilibrium has been

tremendously destroyed and land degradation has become endemic in many areas. In Nigeria today, Natural and anthropogenic causative factors such as erosion and landslide, pollution from oil spill and other greenhouse gases over land and desert encroachment has led to the destruction and loss of several hectares of arable farmland(UNCSO,1997).

Annually, Anambra, Abia, Ondo, and Imo states encounter a massive loss of arable farmland caused by erosion as a result of heavy precipitation. In lined with this, prolonged drought and the pressure of animals grazing on the land is on its daily increase in the northern deserts while in the Niger delta region, oil spill and severe land degradation daily pollutes and renders hectares of arable farmlands infertile and this contributes immensely to about 80% of loss of biological diversity. (UNU, 1996)

The rise in population has resulted to marginal rainfall areas being vulnerable to drought and more bared lands as a result of the decline in vegetative cover resulting from the intensive anthropogenic activities by humans, higher rates of animal grazing , deforestation for building and fuel needs, thereby exposing the soil to the ravages of wind and water erosion (UNFCCC, 2011)

Similarly, the demand for gathering of firewood has shifted on the increase as a result of high demand for fuel especially in the rural communities. As this is said to be a time consuming occupation, it has really affected the farmers input to crop production and thus has led to reduced agricultural practice (IEA.ORG)

Population growth in developing countries has caused a shift of population from rural to urban. Some communities or even individuals have been forced to move out of a particular area of land due to limited job opportunities being provided for them and leasing or even selling off their available land to fast growing/mechanized farmers thereby leading to the shortage of land available for a growing number of low income farmers.

Arable farmland is lost annually because of population increases; rural-urban migration also increases to areas of paid labor by high income farmers. The expansion of these urban areas leads to the conversion of so many hectares of arable farmland for urban projects like the construction of houses , schools , roads , parks for recreational activities as well as new towns when necessary (UNCSO, 1997)

The high rate of population growth in Nigeria has resulted in the unsustainable use of natural resources which is the basic foundation for livelihood without having concern for

the future. This has led to tremendous effects on our natural ecosystem. The provisioning, regulatory, cultural and supporting services which are derived from the ecosystem are put at a high risk due to the harsh use of these natural resources (UN.ORG)

Over the years, there have been several symptoms of ecological stress like the deteriorating nature of the grass land areas, very low crop yield, soil erosion which has forced so many migration activities to the cities and low standard of living by the poor. All these effects can produce long-term, possibly permanent damage to the environment which in turn would have a huge negative effect on agricultural production.

Most of these problems are closely related to a simple factor of human population which has exceeded the carrying capacity of the land. In the light of the above problems, I would say that this thesis has been set out to identify and articulate population and production consequences within agriculture with Obingwa local government area as a reference point.

1.2 STATEMENT OF PROBLEM

Food and indeed agriculture is very indispensable to human development. Man's endeavor has always centered on the quest to provide for himself with the basic needs of life such as food, clothing and shelter. It is evident that the population of Nigeria grows very fast. For instance in the national census in 1963, the population of Obingwa was 87,800 whereas as in 1991, it has increased to 174,600 which is about 98.9% increase within 28 years (OBLGA Gazetteer, 2001). For instance in 1963 National census, a total figure of 55.6 million was recorded officially though it was said to have been encumbered with charges of inaccuracy and manipulation for regional and local political purposes. Nonetheless, the official 1963 figure of 55.6 million as total national population is inconsistent with the census of a decade earlier because it implies a virtually impossible annual growth rate of 5.8 percent. In addition to likely inflation of the aggregate figure, significant intraregional anomalies emerge from a close comparison of the 1953 and 1963 figures. For instance, in portions of the southeast, the two sets of data show that some non-urban local government areas had increased at a rate of almost 13 percent per year, while other neighboring areas experienced a drastic growth rate of 0.5 percent per year. Despite the controversy, the results of the 1963 census were eventually accepted. (U.S. Library of Congress)

Inevitably, rise in population leads to higher demand for food production. This is one of the major problems facing Nigeria today for its growing population. In Obingwa local government, there is a belief that as there are more hands involved in agriculture, it gives rise to more food production and thus leads to good livelihood for families. This as a result has contributed immensely to the increase in polygamous marriages and more children and thereby has led to an increasing population. In spite of the government's efforts, farmers are toiling and are still unable to produce enough food for the population due to scarcity of land, mostly through land fragmentation, rural-urban migration, deforestation and so many other environmental vices. However, food production in Obingwa has not yet kept pace with the alarming population increase as a small proportion of the people are engaged in agriculture (Udoala Eastern Ngwa multipurpose and co-operative society, 2012)

1.3 AIM AND OBJECTIVES

The main purpose of this study is to investigate and identify the consequences of population growth on agricultural production. The study introduces the following question to help in conducting the research;

To what extent have population growth affected agricultural practice in Obingwa?

To what extent have land pattern systems matched with population growth?

To what extent has rural-urban migration affected agricultural production?

1.4 AREA OF STUDY

Abia State lies between latitude 07'00' and 08' 10' and longitude 04' 45' and 06' 17' North bordering Imo State in the East and Anambra to the northwest, Enugu to the north and Ebonyi States to the North east. To the East and South East, it is bounded by Cross River and Akwa Ibom States, and Rivers State to the South. The landmass is 5,833.77 square kilometers. The State is located within the forest belt of Nigeria, and the temperature ranges between 20' C and 36', characterized by two seasonal climates viz (rainy and dry seasons). The dry dust-laden Northeast trade winds from the Sahara desert, which blows across the country during the dry season (Mid October to March). The rainy period is from April to October, during which period the moisture-laden Southwesterly winds blow,

bringing with it the rains (UNDP, 2005). It is low-lying with a heavy rainfall of about 2400 mm/year and regarded to be so high between the months of April through October (CTN, 2011)

This study was carried out with the workforce population of the Agricultural department in Obingwa local government area headquarters, in Abia state in the south-eastern region of the federal republic of Nigeria. It has an area of 395 km² and a population of 181,894 (National census, 2006) and is well-known as the hot spot of Abia state politics.

1.5 MAP OF THE FEDERAL REPUBLIC OF NIGERIA

36 states of the federation and the neighboring countries



Picture 1

Picture 2

Source: FAO, 2005; Central Intelligent Agency, World Fact Book.

1.6 SIGNIFICANCE/JUSTIFICATION OF THE STUDY

This study may or may not be able to help the government and all other concerned authorities to review and improve the different ways of land management systems in the state and at the local government level, but will point out some related or closely related issues in food production in relation to population increase. By so doing, helps to device means through further research studies to provide solutions to the problem of land availability to farmers which may perhaps lead to more available farm land and hence boost food production.

In view of the above, the general public could benefit through the availability of more information now and in the future and which will also serve as baseline knowledge for subsequent scholars on a similar or related topic.

2.0 REVIEW OF RELATED LITERATURE

Under these heading, conscious efforts have been made to review some of the literatures that are directly or indirectly related to this thesis project. It is therefore my intension to proceed with defined sub-headings which I believe will in no small way elucidate, clarify and bring to sharp focus the problems under study. These sub-headings are listed below:

- i. Concept of population
- ii. The concept of population growth
- iii. Effects of land tenure system on Agricultural production
- iv. Effects of population growth on the Ecosystem
- v. Relationship between population growth and Agricultural production

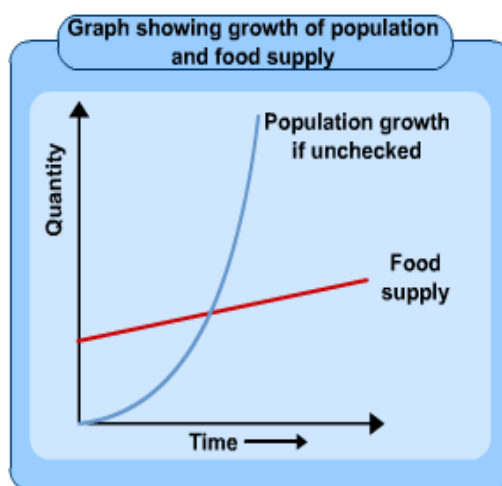
2.1 CONCEPT OF POPULATION

Anyanwu et al (1987) put forward that “Population in Economics refers to the number of people (human population) living in any defined area such as Lagos, Abuja, Aba, Network, Tammisaari” Generally, this concept is also applied to the members of the plant and animal kingdom, their composition, distribution as well as their ecological niche.

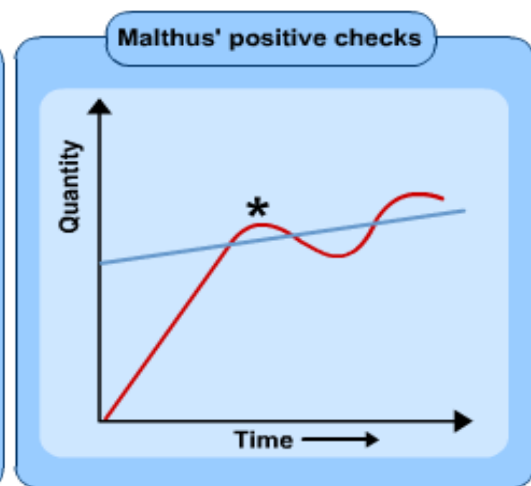
However, the study of human population covers the natural and social sciences, statistics, biology, medicine, geography sociology and economics, which are all referred to as demographical study of population. Sequel to Thomas Malthus first published essay (1798) view point on population, his exposition raided heavy criticism from his contemporaries of what they called his pessimistic outlook. But on the contrary, the aim of his writing was to refute the current idea that the conditions of life were gradually moving towards an earthly paradise.

However, certain conditions were prevailing in England at the time he propounded the theory, which influenced his thought. Firstly, population has begun to rise considerably which he speculated due to it was a new phenomenon. Secondly, wages were very low relative to the cost of living and prices of commodities and services were very high. Therefore, there was a real distress amongst the low income earners looking at these incompatible conditions outfacing them. These values he has propounded to be a universal tendency for population. To this fact, his theory of population rests on the law of diminishing returns and as well stated that there is a constant tendency in all animated life to increase beyond the nourishment for it.

2.1.1 MATHUSIAN IDEA



Malthus theory of Exponential growth of population and food supply



Population which exceeds food supply is kept in check by war, famine, or disease and the food supply stabilizes. As the population recovers, so the cycle continues.

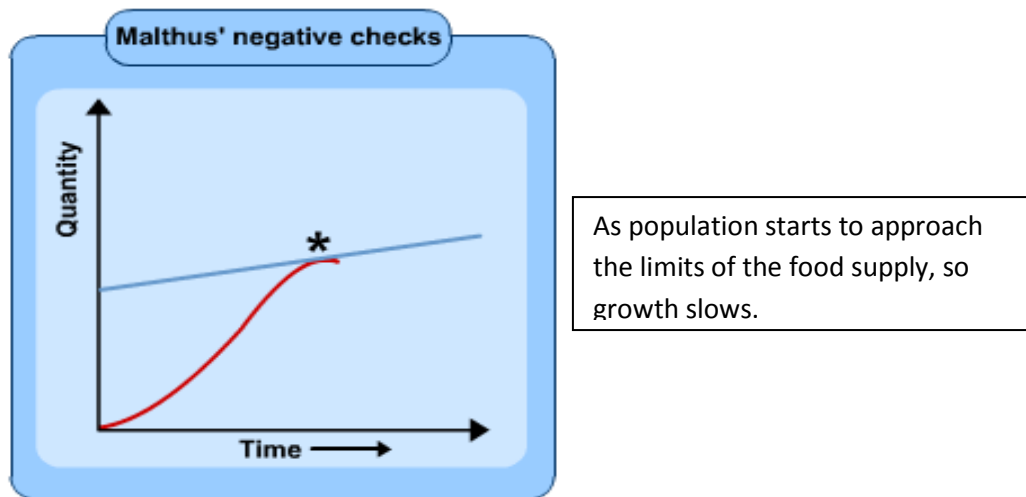


Fig. 1

Source: S-cool.co.uk

Therefore he sought to show that the means of subsistence will bring about an increase in population, unless it would be checked by vice and misery due to famine, war or pestilence. He concluded that if this growth should continue, there would be a problem of fewer natural resources for each member of the growing population and apparently, diminishing return would set in leading to fall in income and eventually starvation (Malthus, *The principle of Population* 1798). On the other hand, the Malthusian theory of population has been falsified by other economists.

Esther Boserup, (*Concept of technology* 1965, 1976, 1981) argued that Malthus did not consider the increase in technology in the developed world but rather based his findings in the law of diminishing returns. She further stated that her theory in the population in contrast to Malthus concept focuses mainly on the population, environment, and technology which encompass density as well as absolute size and growth. She further stressed that successive change in technology has an important influence on population size and that the opposite side of the interrelationship, the influence of population size on technology, has attracted less attention (Boserup, 1981, page 3).

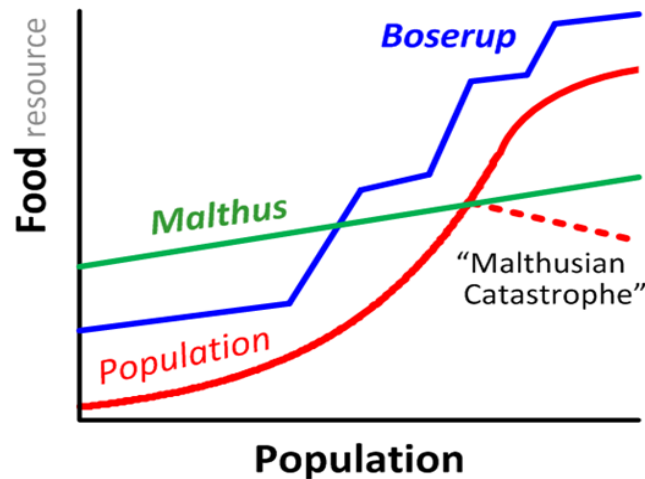


Fig.2. Source: *ecotope.org*

2.2 CAUSES OF POPULATION GROWTH

The world's population today has been one of the growing concern amongst nations as it has hindered development to some countries. Population dynamics is one of the key issues to think about in developmental process (UN, 2012).

2000 years ago, human population was just 300 million which has been estimated to be the United States population.

The world population in recent time has exceeded six billion and is still growing at an alarming rate annually. This trend in population will continue on the higher side and the earth would reach or even exceed its carrying capacity if not properly checked. Certain factors such as high birth rate, low death rate, improved medical care, technology increase etc., has contributed immensely to an average rise in life expectancy which has benefitted the rise in human population (Paul Hawken, Human population size and distribution 2005). In Nigeria today, there has been a rapid increase in population due to polygamous activities of the people as a result of higher fertility rate. This is because the traditional belief of many ethnic groups is that children are blessings from God and also that the more children one has, the more hands he has in producing food and someday would receive a traditional tittle based on the kind of food he produces. Furthermore, ignorance of family planning and birth control devices, improved medical care, population reduction factors like

violence, war and epidemics has been on the decrease, and all these has resulted in the rise of the country's population (UN, 2004, National population commission, 2003).

In Abia state, the population is also on the increase as it has been projected to rise with 10% annually.

2.2.1 WORLD POPULATION FACTSHEET (1950-2050)

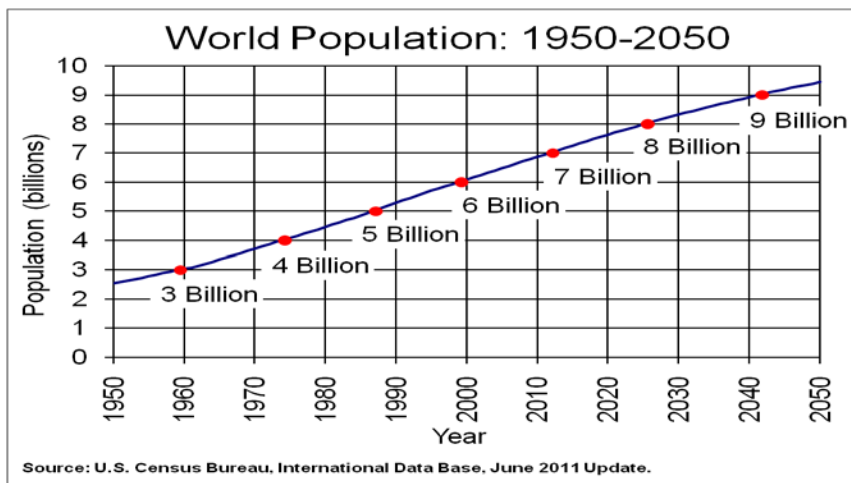


Fig. X

2.2.2 POPULATION PROJECTION IN ABIA STATE

State	Abia
Males	1,430,298
Females	1,415,082
Both Sexes	2,845,380
Growth Rate	2.7
Fraction	0.027
2007	2,943,050
2008	3,023,595
2009	3,106,344
2010	3,191,358
2011	3,278,699
2012	3,368,430
2013	3,460,616

2014	3,555,326
2015	3,652,627

Table X

(United Nations population fund, 2010)

2.2.3 **IGNORANCE OF FAMILY PLANNING AND BIRTH CONTROL**

Ignorance of family planning and lack of birth control programs contributes to the exponential growth in the world population crises (Overpopulation.org, 2013)

Family planning is a tough decision made in a family towards the use of its human and material resources for the benefit of all categories of its members. The citizen lack of interest in family planning programs, birth control devices, (such as contraceptives, condoms, sterilization) has led to the increase in the population of the people of Obingwa.

2.2.4 **IMPROVED MEDICAL CARE**

Increased and improved medical services which have been put in place over the past years as a result of the advancement in the knowledge of sciences and human anatomy has led to the development of curative medicines for human use. This as a result has led to the increase in the use of safer and cleaner sanitation, building of medical centers, antenatal and pre-natal care , immunization exercises , proper waste disposal facilities , clean water etc, and thus has contributed to population increase. This is true because the amount of deaths recorded over the past years as a result of different illnesses such as small pox, chicken pox, typhoid fever, yellow fever and so many other communicable diseases has been drastically reduced presently and has been attributed following the invention of the above mentioned factors (Personal communication, Dr E. Elekwa, Federal medical center, katsina 2012).

In years back, 40-50yrs back, the health of the population was so bad due to lack of medical professionals and improved medical care which resulted in loss of several lives. As compared to the recent times, the number of health care professional especially indigenous medical experts and facilities has increased tremendously to take care of the growing population's medical needs. In addition, adequate medical care is also received from private practitioners both locally and oversees as a result of improvement in the financial background of the population. Most people now can afford adequate food which

helps in nourishing the body tissues and therefore keeps the body in a good nutritional balance and thus extends people`s lives.

2.2.5 DECREASED MORTALITY

The decrease in the number of death of individuals has led to the fundamental increase in the rise in the number of humans. This is a sure fact owing to the improvement of medicine; humans have found curative measure to different diseases that could result to death. This has caused the increase in life expectancy of individuals thereby reducing mortality rate which has led to the fast growing rate of the population.

Data showing the percentage of birth to death rate at Nkechi Maternity home, Km 7 Aba-Ikot ekpene road, Abia state Nigeria.

Table X

YEAR	NO.OF BIRTH	NO.OF DEATH	% MORTALITY
2000	70	5	4
2001	78	3	2
2002	73	4	3
2003	61	7	5
2004	112	9	10
2005	50	1	1
2006	66	3	2

Source: Midwife birth record (2000-2006)

2.2.6 LACK OF EDUCATION

Illiteracy amongst the people has been of immense factor that has projected the number of people living in this area. Due to lack of education, they fail to understand the resultant effect of over population as they are not interested in the controlled system of family reproduction (Family planning and birth control measures).

3.0 EFFECTS OF LAND TENURE SYSTEM ON AGRICULTURAL PRODUCTION

The fact that land is communally owned in many parts of West Africa plays an important role in the pattern and method of farming in different communities (Oyebola, 1970).

As Nigeria is in the West African region, this system is practically observed in different communities in the 36 states of the federation. In the rural areas, every male or the father (patrilineal) or the mother (matrilineal), has an equal right to community owned land (Ishor David et al, Research journal vol 3, no 18, 2013).

This makes it impossible for the head of extended family, lineage, village or clan to allocate more land to the more resourceful ones who possess enough enterprise and capital to make the best use of communally owned lands without the consent of others involved in the land ownership (Famoriyo 1973, 1980).

This basically implies that each member of the family is entitled to a family land basically for production of food for himself and his entire house hold. Similarly, land fragmentation has also become a huge hindrance to agricultural production in this system of land ownership. It can lead to inadequate agricultural mechanization; inefficiencies in production and large alleviation cost (Thomas et al 2003, 2006). In some areas, the death of a farmer will bring about equal sharing of his owned pieces of land amongst his children no matter how widely scattered the lands might be.

This means that the holdings of an average farmer time is therefore wasted in moving from one plot to another, his capital being duplicated and his land is also wasted as a result of several fragmentation and construction of boundaries which separates one plot of land from another. In the southern part of Nigeria, control over land is vested more in clans, villages and communities. This bimodal system of agriculture in Africa and Nigeria in particular has led to increased food insecurity and impoverishments of the people as a result of increasing cost of food. (UNCSD, 2012)

In the western world, the agrarian land tenure system speaks the order of agricultural practice and food production as individual occupants of land are identified by the right they hold rather than the actual possession of the land. Under this land tenure system, land reforms are strictly made and followed as individuals do not have complete control over the land in use and the sale or even fragmentation of the land is hardly possible (Agrarian systems diagnosis, FAO 1999). Therefore the cultivator and his future generations are

permanently confined to the family land. The practice of dividing the farmland amongst farmers who bore sons is also impossible under this system. Undoubtedly, the aforementioned agreement limits the productivity of agricultural land since fragmentation and excessive division of farm land results in uneconomic units (Agrarian systems diagnosis, FAO 1999 page 11-16).

It is now increasingly recognized that changes in the out-model system of land are necessary in order to increase agricultural production and promote economic development. As seen in the case of Mozambique (ASD, FAO 1999), Food and agricultural organization together with the government of Mozambique has done a great work in reforming the land ownership system in the country. New land policy and legislation was drafted with 20 different ethnic groups each with its land access and land management systems. Initially, many had thought that it would be highly impossible integrating traditional or customary land practice into the new legislation. Both parties (FAO and the Government of Mozambique) devised a new law that recognizes the importance of customary land access as one of many channels through which State attributed land use rights are acquired. This made it possible to address so many land issues through the reduction of the customary system into one several patterns of behavior and this has facilitated the development a concise new land law which was approved in 1997 and has been in force in Mozambique till date (ASD, Page 11, FAO 1999).

In other words, constraints on agricultural development by land tenure system have been expressed as thus:

1. Land tenure system in many parts of the country is still largely under the control of families, clans and villages.
2. Ownership and control of food crop land by individuals tends to be transitory although they are often able to establish control over land area in the case of tree crops.
3. As a result of this system of inheritance, land owned by individuals or extended families also tends to be fragmented and scattered leading to the loss of much valuable time in cultivation.

4.0 EFFECTS OF POPULATION GROWTH ON THE ECOSYSTEM

In the world today, individuals and population do not live alone in nature as there is other components of life which makes up the ecosystem. It includes association with other environmental components (living and non-living). There is always a network of existence and relationship for each and every part of the ecosystem which they all share in common (Miller,1997).

Such a community of plants and animals (biotic components) together with their nonliving components (abiotic) in their environment which works as a system is referred to as the ecosystem. For most of our history, human beings have maintained a balance with the environment. The primitive man lived in the ecosystem for so many years without destroying it because his number was few. In recent time, it is a different scenario. Over seven billion human beings with rising aspirations inhabit the earth thereby exerting more pressure beyond its carrying capacity. Recent studies has shown an alarming growth rate especially in less developed countries and a slight growth than usual in the developed world(UN world population prospect,2012 edition, page 1).

Typical symptoms of ecological stress could be seen recently in the case of deteriorating grasslands due to excess sunlight with very low precipitation, soil erosion valued at 5-7 million hectares loss caused by over grazing, deforestation and mismanagement of arable farmland (FAO, 1999), rise in the level of the sea caused by high level of melted ice and other climate modifications (USDA, 2012). At an increasing level, scarcity, inflation, unemployment and economic stagnation or decline has occurred all over the world as a result of the shift in balance between man and his immediate environment. The stress has assumed a social as well as political character like hunger, forced migration to the cities, deteriorating living standards and political unrest. The recent tremendous increase in population has resulted in the disruption of many of the balanced ecosystem (NOAA, 2013), with the diversion of energy and material to domestic animals and therefore has resulted in radically altering the balance between the environment and the plant which supports other lives.

The destruction of the vegetation as a result of man's anthropogenic activities like the felling of trees has adopted the ecosystem productivity, seized its functions such as the cultural, provisioning, supporting and protective services and thus left the soil exposed to severe erosion by wind and flood actions. This as a result has caused an eventual loss of the natural soil and vegetation, leaving only barren and unproductive rocks to the

ecosystem. The marine environment which is a major source of food for man has also been adversely affected. Studies have shown significantly that the sea has become the world's ultimate center of all pollutants (toxins and all GHGs which fall from the atmosphere as acid rain) and a passive recipient of staggering amounts of industrial, agricultural and municipal waste products (IAEA bulletin no 54, 2013). To this effect, living organisms which provide support for life are either destroyed or endangered. When linked to the food chain, these marine foods are sources of food and nutrient to humans and it therefore poses a huge life threat when consumed as a result of several amounts of toxins in them. Marine transport activities have also resulted in the unhealthy life of the ecosystem as a result of the introduction of alien species from different habitats to a particular one. In this process, there would be competition for survival between the indigenous species and the aliens which could result in the marine habitat being unstable. Some sensitive/target species of organisms which serve as marine indicators would either be destroyed or face extinction. The increasing change from natural ecosystem to modified ecosystem as human population increases becomes apparent with the development of agriculture to meet man's needs like the use of fertilizers and pesticides to increase productivity, exploitation of the forests for fuel and building of houses and boats, destructions of the natural vegetation for human habitation and agricultural lands and the extensive use of resources as a result of advancement in technological knowledge (David Weston, 2001). These activities brought about by rapid population growth have immensely changed the ecology of vast regions mostly with adverse effects. The rise in the "grain city ecosystem" (Odum et al, 1989) as a result of great population concentration has destroyed the natural ecosystem and in their places arose a synthetic or artificial ecosystem. In this aspect, the biota and the soil have been replaced by steel, concrete, stone, wood, brick and glass where by the climatic part of the original ecosystem remains and would be modified locally by the heat generated by concrete and bricks, the increased runoffs from roofs and the smoke and fumes produced by automobiles and factories. All these occurrences have been reported in the interpretation of past climate conditions from proxy records to be an evidence of abrupt climate change which is an inevitable surprise to humans (National Academic Press, 2002, pg 19-72). All life forms support other life forms. However, rapid population growth of the human race has threatened the entire population of animals. Man has greatly reduced certain animal populations such as the Wyoming toad in U.S.A, La Palma pupfish in Mexico, Socorro dove and isopod in Mexico, (IUCN, 2012) and so many others.

In view of these great reductions in the population of animal species, it could be concluded that there is a clear connection between their sudden disappearance and the increase in human population.

(O.J.A Bayode etal , 2011) made it clear that exploitation of the rural environment especially in the area of natural resources has resulted in numerous problems which have adversely affected the ecosystem (plants and animal communities) of many parts of Nigeria and has threatened the livelihood of the people as well.

Similarly, looking at man's interference with nature and the result of such interference, it is pointed directly to his agricultural and industrial activities and can be concluded that industrial activities could barely survive if not for the invention of agriculture and this as a result has made life especially in the urban areas possible. It has also permitted the great increase in the world's population which has taken place in recent times.

Over the past one hundred years, the number of people inhabiting the earth has greatly increased, which is a result of man's quest to understand his environment by the use of modern science and technology. As man has greatly understood his immediate and surrounding environment, he is now better able to control and exploit its resources there-in even to the expense of his life. As the population increases, man has had to use more and more of his environment to provide food and other things he needs. As the world population continues to increase, the influence of man on his environments becomes more intense. Man's attempt to changing nature has greatly brought a surprised outcome to him and has resulted in harmful expectations as he has totally ignored the basic ecological principles; and states that "organisms of any community are in a balanced inter-relationship of which the introduction of a new factor will greatly upset the balance of the community as a whole"

5.0 RELATIONSHIP BETWEEN POPULATION GROWTH AND AGRICULTURAL PRODUCTION

Population and agriculture are regarded as the ultimate culprit. A rapidly increasing population will ultimately slow down agricultural production (UNCTAD, 2013).

Similarly, a 1972 publication titled ' The limits to growth' which was prepared by an international interdisciplinary team, headed by Dennis L. Meadows was the most widely known study which describes quantitatively the inter relationship amongst the various

problems confronting human kind . The study was commissioned by the club of Rome, Italy which is an informal non-political association of some one hundred eminent private citizens and professionals from thirty (30) different countries established in 1968. The club members believed that traditional, political, economic and social institutions and policies are unable to cope with global problems such as food supply, population growth, environmental pollution as well as unsustainable use of global natural resources.

In view of all these, the club has since the 1980s embarked on high level studies on an international level which has contributed immensely to the upliftment of sustainability concept and this has played a significant role in showcasing the interdependence of environment and economics. To measure the world's state of sustainability, population factor increase, agricultural production, industrialization, environmental activities and the consumption of non-renewable natural resources cannot be forgotten. Each of these factors affects the others like in the case of increased population which requires more food production thereby using more land for agricultural production etc. As a result, this depends on the increased use of capital which uses up the scarce resources and produces more pollution to the environment and thus a negative effect on the entire human population.

Adindu S.N, (Personal communication, May 2012) records that population exerts more pressure on land thereby bringing an imbalance between humans and their surrounding environment. She further stated that the extreme version of population growth could be seen in the case of China and India and as a results, the demand for food is high whereby resources to meet such demand are fewer. This according to her could lead to political, social or economic imbalance. The ability of many developing countries to produce more food is seriously hindered by the damage to the physical environment caused by the increase in human population in socio-economic setting which therefore restrict farmer`s options for agricultural production(Food, nutrition and Agriculture, FAO, 1991).

More so, (Okezie, C. A. etal, 2012) affirms that land fragmentation as a result of increase in family size has a far reaching impact on agricultural production. For the fact that land is been owned communally and individually, fragmentation is highly possible because the farmer shares his portion of arable farm lands to his male children no matter how widely spread the lands might be. These shared lands may or may not be used for agricultural purposes by his children. By so doing, the available land for the purpose of agriculture has been reduced and which also reduces the amount of food production.

6.0 RESEARCH METHODS

This chapter deals with the research methods and was arranged under the following sub-headings:

- ❖ Design of study
- ❖ Population of study
- ❖ Sample and Sampling techniques
- ❖ Instrument for data collection
- ❖ Validation of the instrument
- ❖ Reliability of the instrument
- ❖ Method of data collection
- ❖ Method of data analysis

6.1 RESEARCH DESIGN

This research was a survey type which means that a portion of the problem was studied instead of the whole. The reason for this type of survey is to have a less expensive, less time-consuming and more accurate result. Surveys are generally intended to give two aids of information, namely: data concerning existing conditions and data for improving existing conditions.

6.2 POPULATION FOR THE STUDY

The population was made up of all the staff of the Agricultural department of Obingwa local government area. As at the time of this study, the staff strength of the department was six hundred and fifty people (650).

6.3 SAMPLING AND SAMPLING TECHNIQUE

Random sampling technique was used. The staff of the Agricultural department was randomly selected. The procedure used in the selection of these workers was a systematic random sampling. I agreed on the number with the help of two research scientists and numbers were assigned to all the population and they were selected based on the agreed number (Onyekwere, O and Rufus. S, 2012). These populations also were made up of all heads of department and other sections of the departments. This constituted a sample size one hundred and thirty (130) workers.

6.4 INSTRUMENT FOR DATA COLLECTION

The instrument used for the collection of data was a questionnaire developed by me which comprises of (A) Personal information and thoughts from respondents and (B) Responses based on the research question. The response from the respondents was formatted with the following response options:

SA	MEANING	STRONGLY AGREE
A	MEANING	AGREE
D	MEANING	DISAGREE
SD	MEANING	STRONGLY DISAGREE

6.5 VALIDATION OF THE INSTRUMENT

The questionnaire was given to scientists in agricultural field in the department for face validity. The suggestions offered by these scientists were taken into account before the final draft of the fifteen items used in conducting the research.

6.6 RELIABILITY OF THE INSTRUMENT

In order to establish the reliability of the instrument to be used, I engaged in hours of discussion session with 10 members of the staff who were ex-farmers so as to gain more knowledge of the problems they encountered during their time as farmers and what suggestion/s they deemed fit to be introduced in agricultural practice to boost food production. Most of the information received from these ex-farmers was adopted for the reliability of this research instrument

6.7 METHOD OF DATA COLLECTION

I worked at the Agricultural department of Obingwa local government area as an intern student. During my stay there, I was able to gather relevant information needed for this research study. I was given permission to review all works done by other scholars and also to view their databank. I administered copies of the questionnaire to all the respondents and retrieved them as they have finally responded.

6.8 METHOD OF DATA ANALYSIS

The data obtained from the respondents from each of the research questions would be plotted using a bar chart arranged in columns to see the number of responses from each of the questions in the questionnaire. The absolute figures obtained with higher amount of numbers signify a match to the research question and lower numbers signifies a mismatch to the research question.

6.9 DATA PRESENTATION AND RESULTS

This chapter deals with the presentation of data analysis and the results obtained.

Research question1:

To what extent has population growth affected agricultural practices in OBLGA.

Table X:

The extent to which population growth matches with agricultural practice:

	Item description	SA	A	D	SD	N
1	Agro-forestry practice is an agricultural practice that matches with population growth	3	50	47	30	130
2	Mix-farming is an agricultural practice that matches with population growth	5	50	43	32	130
3	Cropping on the same piece of land continually matches with population growth	15	55	35	25	130
4	Shifting cultivation is an agricultural practice that matches with population growth	10	49	38	33	130
5	Crop rotation is an agricultural practice that matches with population growth	20	25	36	29	130

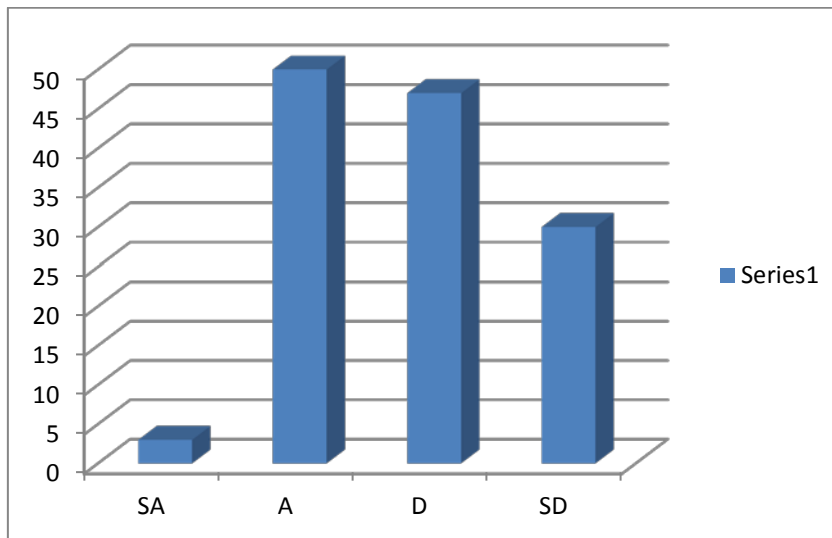


Fig.1: *Agro-forestry practice is an agricultural practice that matches with population growth.*

As we can see in Fig.1, Here the number of respondents that disagreed is 77 and therefore gave a no match

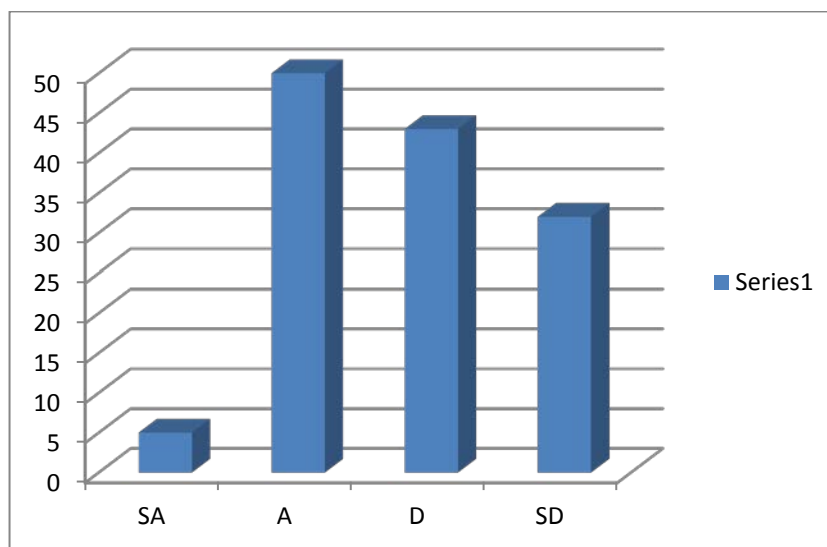


Fig.2: *Mix-farming is an agricultural practice that matches with population growth*

As we can see in Fig.2, Here the number of respondents that disagrees is 75.

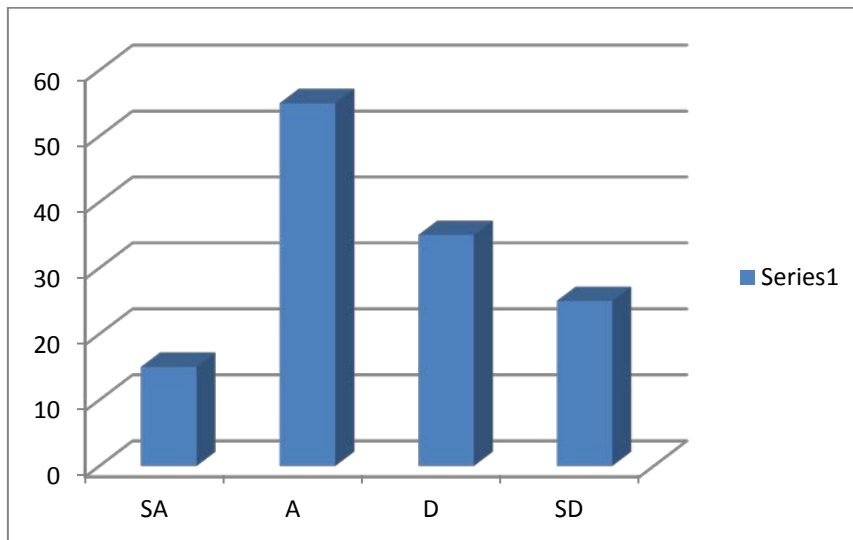


Fig.3: *Cropping on the same piece of land continually matches with population growth.*

As we can see in Fig.3, the number of agreed respondents matches at 70.

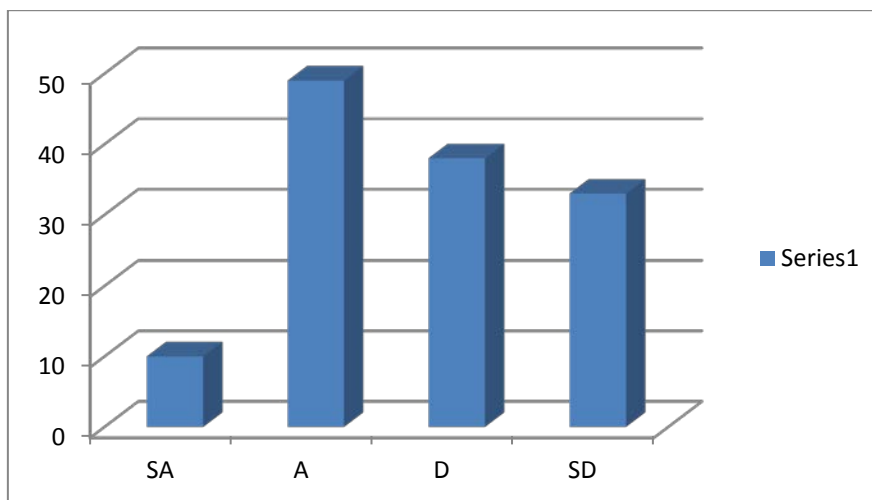


Fig.4: *Shifting cultivation is an agricultural practice that matches with population growth*

Here in Fig.4, the number of disagreed respondents is 71.

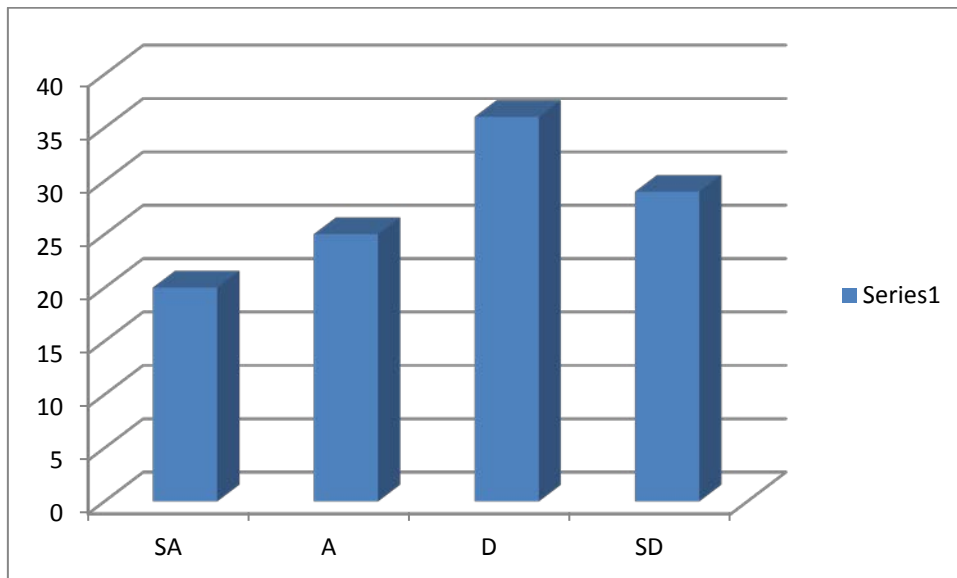


Fig.5: Crop rotation is an agricultural practice that matches with population growth

As we can see here in Fig.5, the number of respondents that disagrees in this question is 65.

Research Question 2

To what extent have land pattern system matched with population growth in Obingwa local government area?

Table Y

The extent to which land pattern system matches with population growth in Obingwa local government area

6	The traditional land system matches with population growth	5	46	48	31	130
7	The pattern of land tenure system matches with population growth	9	61	36	24	130
8	The pattern of land ownership matches with population growth	8	62	35	25	130
9	Land fragmentation matches with population	16	59	29	26	130

	growth					
10	Communal land pattern tenure system matches with population growth	15	63	32	20	130

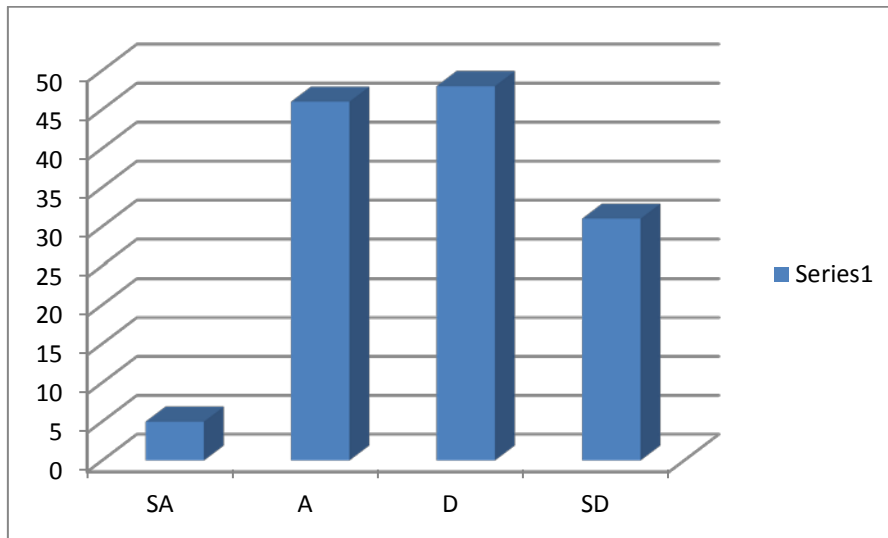


Fig.6: *The traditional land system matches with population growth.*

In Fig.6 here as we can see, the number of disagreed respondents is 79.

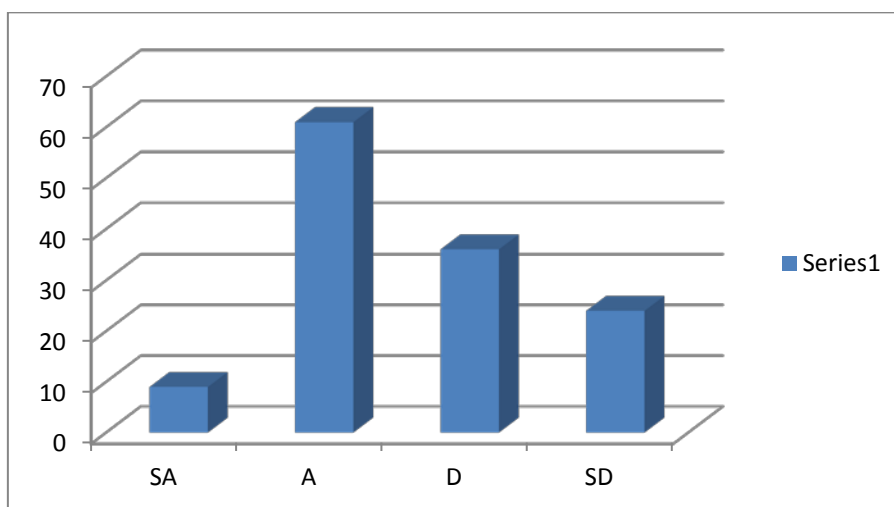


Fig.7: *The pattern of land tenure system matches with population growth*

As we can see in Fig.7, The number of respondents that agreed to the question is 70

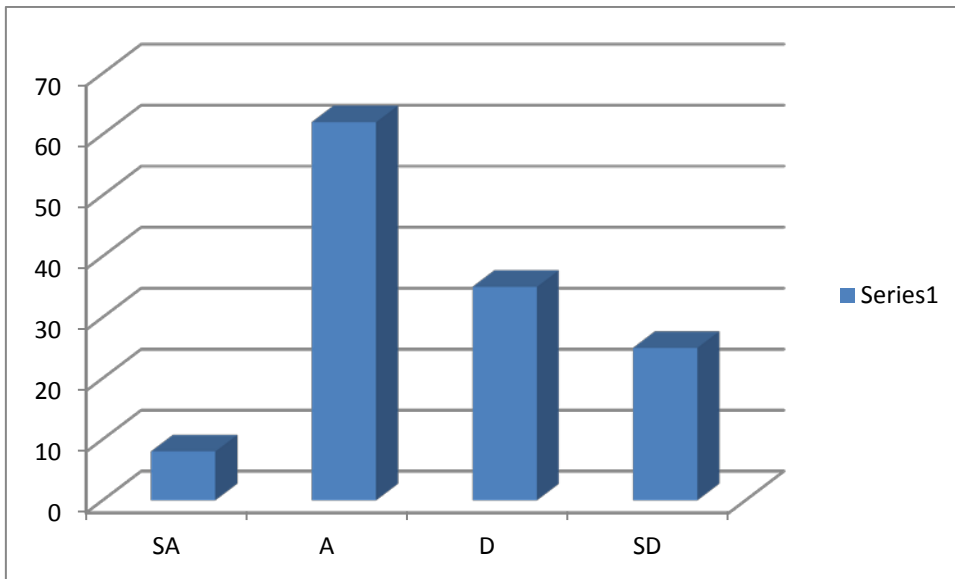


Fig.8: *The pattern of land ownership matches with population growth*

As we can see in Fig.8 the number of agreed respondents in this question is 70

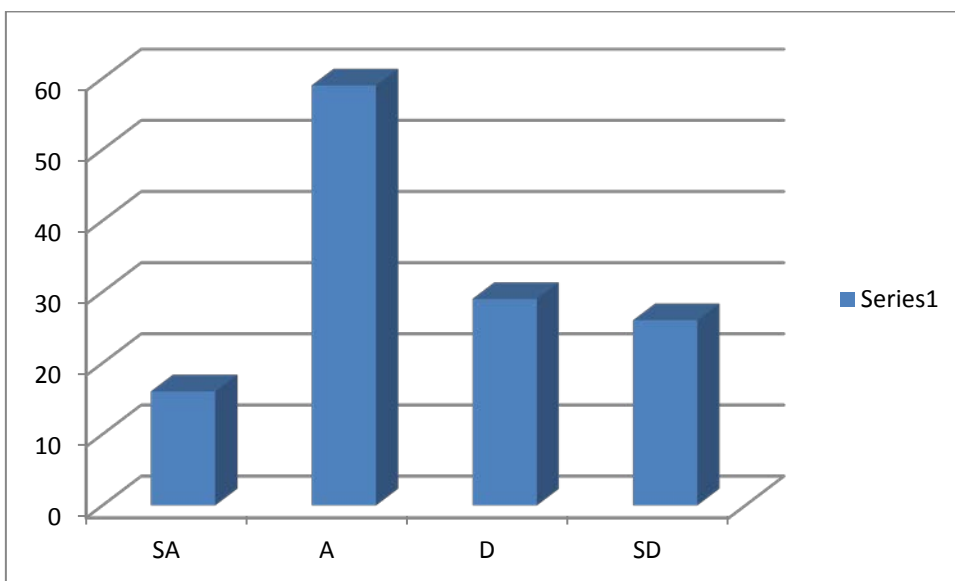


Fig.9: *Land fragmentation matches with population growth.*

As we can see in Fig.89, the number of agreed respondents here is 75

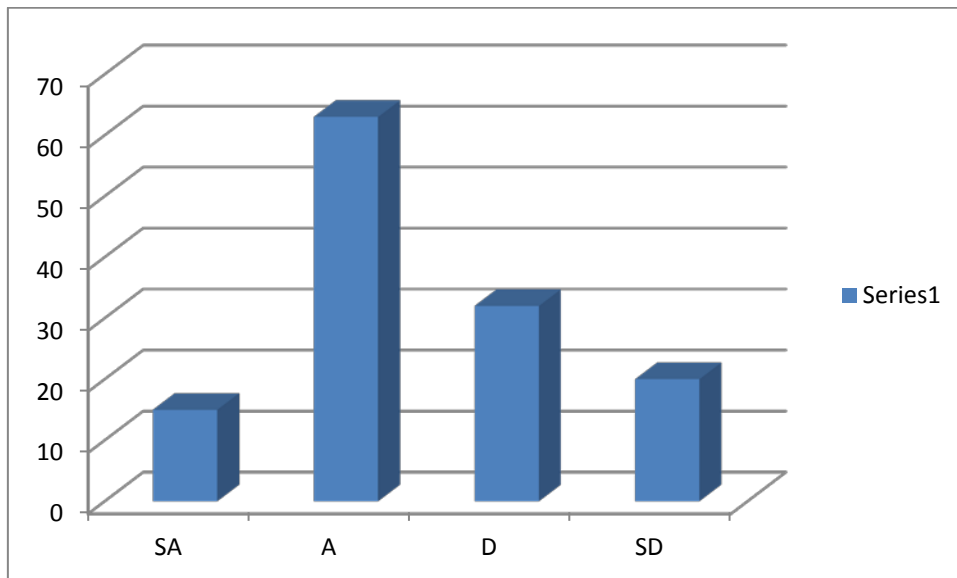


Fig.10: Communal land pattern tenure system matches with population growth.

Here in Fig.10, 78 respondents agreed to this question.

Research Question 3

To what extent has rural-urban migration affected agricultural production in Obingwa local government area?

Table Z:

The extent to which rural-urban migration matches with agricultural production

	Item description	SA	A	D	SD	N
11	Shortage of land available for farmers has led to rural-urban migration which has affected agricultural production	9	62	38	21	130
12	Farming as an occupation for the poor has led to rural urban migration which has affected agricultural production	15	58	37	20	130
13	Higher paying jobs and better educational opportunities has led to rural-urban migration and has affected agricultural production negatively	17	57	35	21	130
14	Capital intensive methods of production by large-scale farm operators had led the movement of rural farmers to the urban in search of well-paid agricultural	15	61	23	31	130

	jobs					
15	Lack of government land decree/act implementation, grants and agricultural subsidies has forced many farmers to either migrate to the urban areas or abandon commercial agricultural production.	12	56	38	24	130

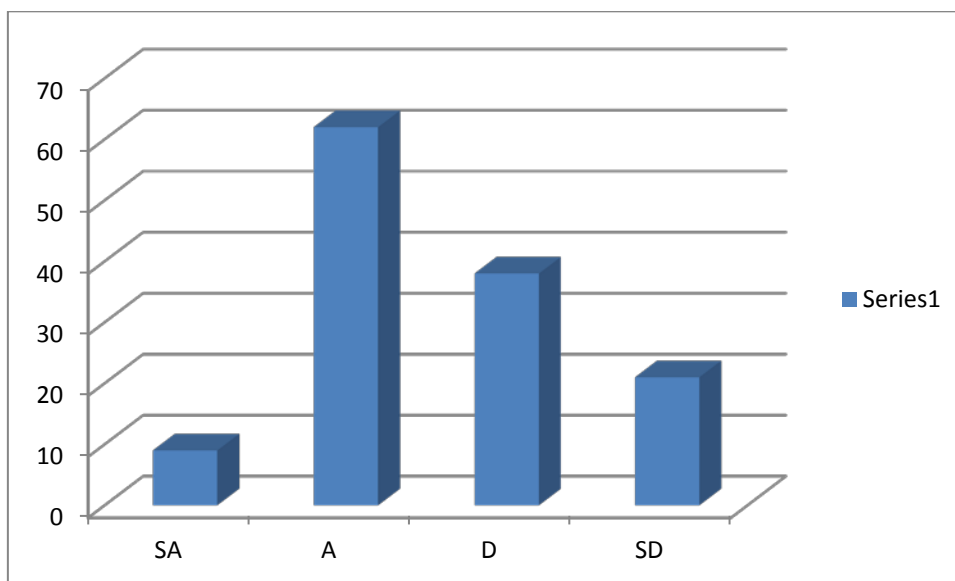


Fig.11: Shortage of land available for farmers has led to rural-urban migration which has affected agricultural production.

As we can see in Fig.11, 71 Respondents agreed to this question.

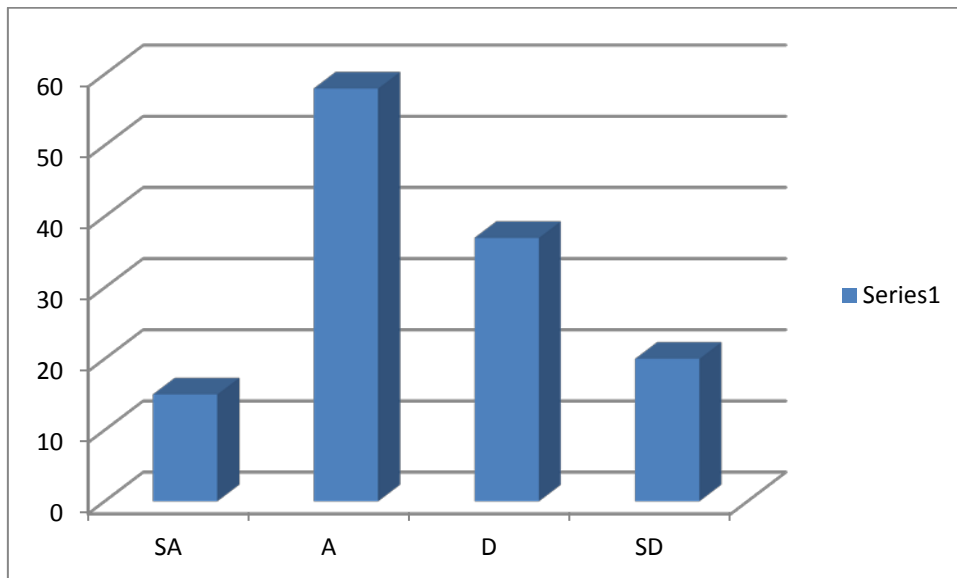


Fig.12: *Farming as an occupation for the poor has led to rural urban migration which has affected agricultural production.*

As we can see in Fig.12, 73 Respondents has an agreement to the research question.

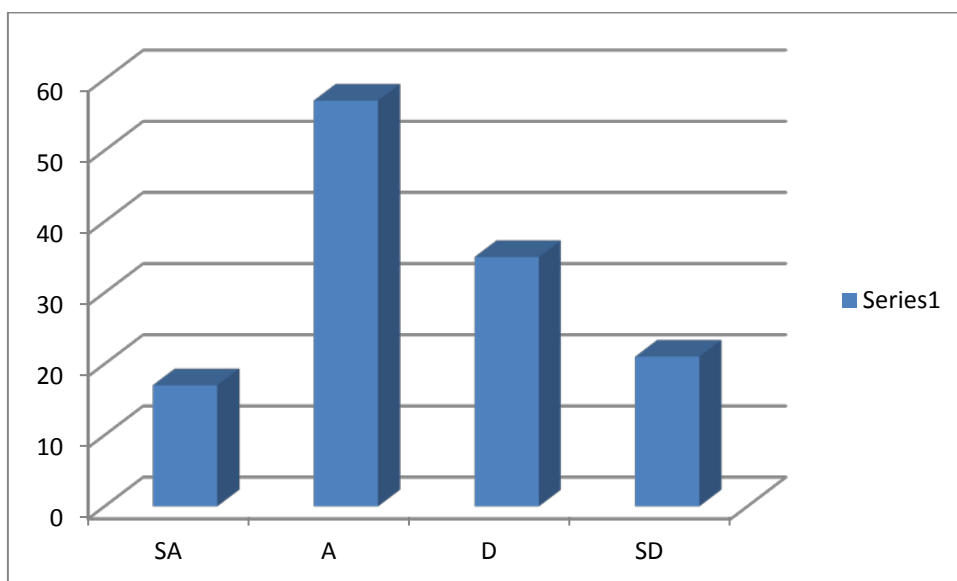


Fig.13 *Higher paying jobs and better educational opportunities has led to rural-urban migration and has affected agricultural production negatively:*

As we can see in Fig.13, 74 of the Respondents show an agreement to this research question.

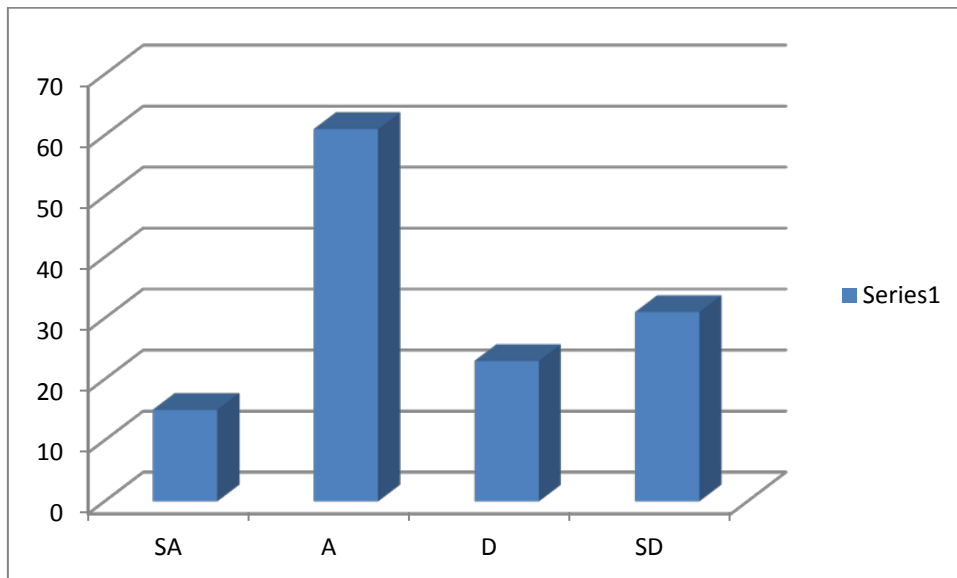


Fig.14: Capital intensive methods of production by large-scale farm operators had led the movement of rural farmers to the urban in search of well-paid agricultural jobs.

Here as we can see in Fig.14, 76 of the Respondents agreed to the question.

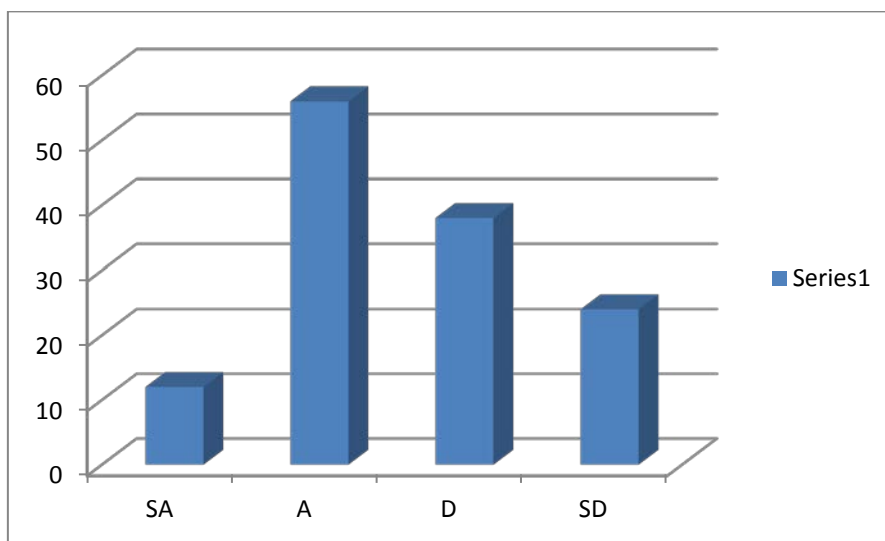


Fig.15: Lack of government land decree/act implementation, grants and agricultural subsidies (e.g. improved seedlings, proper implements and agricultural fertilizers) has forced many farmers to either migrate to the urban areas or abandon commercial agricultural production which has had a great effect on agricultural production

As we can see in Fig.15, 68 Respondents agreed to this research question.

7.0 DISCUSSION OF FINDINGS

In table 1, it could be seen that the respondents showed a great interest in the questions as the received data is of higher numbers. But all these points to show a disagreement as seen in Figs 1, 2, 4 and 5 at 77, 75, 71 and 65 respectively. Except for the third research question as seen in figure 3, where 70 of the respondents shows an agreement to the research question.

Significantly, this shows that population growth matches with agricultural production in the locality. This is true as a result of an increase in the number of people without a corresponding increase in land available for farming makes it possible for agricultural lands to be used for other purposes other than farming (e.g. building of houses) which will decrease the number of available land for farming and thereby making it impossible for the farmer to practice crop rotation and hence farming on the same piece of land annually would be the only option.

More so, Table 2 on the other hand had shown to a great extent that land pattern system supports the fact that population growth affects agricultural production. Fig 7, 8, 9 and 10 at the respondent's numbers of 70, 70, 75 and 78 respectively points to show that the pattern of land management, land ownership, land fragmentation and communal land tenure system plays an important role in the local government area. For the fact that land is being owned individually or communally, this therefore affects all decisions regarding the type of land management systems in the area. To this end, all decisions are made and implemented by such ownerships. This affects agricultural production as these lands would be fragmented and shared amongst the farmer's offspring and thus would lead to shortage of available land for farming. This is in line with Okezie, C.A. et al, 2012; that land fragmentation as a result of increase in family size has a far reaching impact in agricultural production.

Lastly, Table 3 shows that the respondents agreement numbers at 71, 73, 74, 76 and 68 to the research questions as seen in Fig. 11, 12, 13, 14 and 15 shows a significant match that rural-urban migration is an associated factor that hinders agricultural production in the local government. Therefore food products would drastically reduce as farmers no longer have interest in producing more food due to the aforementioned factors. This will lead to low yield in agricultural/food production.

7.1 **IMPLICATIONS OF FINDINGS**

The findings have some clear implications for the agricultural sector in this locality. It would be essential to note the findings from the first, second and third research questions. It goes a long way to showing that population growth has a significant effect on the type of agricultural practices, pattern of land ownership, government`s ability to support farmers in any small way in order to help them produce more food (improved seedlings, mechanized farming, grants etc.) basic awareness especially to women on the implications of producing too many offspring (child education to women)

8.0 **RECOMMENDATIONS**

Based on the findings, I hereby come out with the following recommendations:

- Land polices and its implementations should be amended in the country or new laws should be enacted that could integrate both traditional (i.e. communal and individual) land ownership and legal right of land ownership in the country.
- There should be a public enlightenment on the current trend in agricultural production (best agricultural practices/ mechanized farming).
- Government of the federation should encourage farmers by giving grants and subsidies (cash and improved seedlings).
- Ministry of agriculture and natural resources to device ways of educating farmers on the need for food security through mass media, Agricultural extension programs/workshops, internet etc.
- It is necessary to find out cheap and simple farm implements that can replace the hoes and cutlasses presently used in farming and should also be supplied to the farmers at a subsidized rate for effective and efficient agricultural production.
- The government of the federation should encourage research and development activities in the area of plant and animal production for effective yield in order to boast the agricultural industry in Nigeria.

- Government during the yearly budget should invest more in agriculture as it is important aspect of livelihood in order to cater for the food needs of the growing population in the country.

9.0 **LIMITATIONS OF THE STUDY**

One major limitation is that this is the first of its kind in the local government. However, this limitation notwithstanding, the study has come out with valid results.

10.0 **SUGGESTION FOR FURTHER STUDIES**

This study is by no means an end in itself; rather it opens up more areas for further research. As the present research was not carried out extensively enough, I hereby suggest that the research be extended to cover more aspects of investigation into the consequences of population growth on agricultural production in the 36 states of the federation.

11.0 **CONCLUSION**

As the population of the world increases, food production should also increase to avoid hunger and starvation. This research work has immensely helped in determining the problems that face food production as population increases in razing amount. It has confirmed and also contradicted the research questions used in the cause of this research work. According to this study, it could be seen that the type of agricultural practice, land tenure systems, lack of available agricultural lands, higher paid jobs in the urban areas, capital intensive method of crop production, lack of government land act/decree implementation, grants and subsidies which has led to rural urban migration are the highest factors that affects agricultural production when population increases. For the fact that agricultural production in this area is still under-developed, there is a need to mechanized agricultural production. This can be done through spatial planning and collaborating with all stakeholders in the agricultural sector for an effective decision making.

The use of modern spatial tools like the Geographic information system (GIS) will be of great help in setting out parameters to which agricultural production and the growing population equates by locating the features and attributes for a sustainable food production (Demography). By doing so, many deteriorating factors discussed in this research work will be drastically reduced and hence, food production will be on the increase. Therefore, I personally categorize these main factors as the three (3) down syndrome of food scarcity (Adindu symbol, 2014)

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ANNEX

DEFINITION OF TERMS

POPULATION

The number of people living in a place, sharing available resources mutually.

AGRICULTURE

Food and Agricultural organization defined it as conservation agriculture as an approach to managing agro-ecosystem for improved and sustained productivity , increased profits and food security while preserving and enhancing the resource base and the environment (FAO , 2012)

POPULATION GROWTH

The rate at which a given population size increases over a period of time.

AGRICULTURAL PRODUCTION

The planting and cultivation of agricultural products for man`s subsistent and commercial usages.

RURAL-URBAN MIGRATION

The movement of people from rural villages to urban areas

DEFORESTATION

Deforestation is the conversion of forest to another land use or the long-term reduction of tree canopy cover below the 10% threshold. Deforestation can result from deliberate

removal of forest cover for agriculture or urban development, or it can be an unintentional consequence of uncontrolled grazing (which can prevent the natural regeneration of young trees). The combined effect of grazing and fires can be a major cause of deforestation in dry areas. Deforestation implies the long-term (>10 years) or permanent loss of forest cover, (FAO, 2007)

ECOSYSTEM

An ecosystem is a very complex entity with many interactive components. It can be defined as “a system of complex interactions of populations between themselves and with their environment” or as “the joint functioning and interaction of these two compartments (populations and environment) in a functional unit of variable size” (FAO, 2003 fisheries technical paper, 443, p 71)

LAND FRAGMENTATION

A subdivision of land such that the total area of land owned by a person is less than one or more which is made up of separated pieces of land.

ARABLE LAND

This includes land or percentage of land area under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens; temporarily land lying fallow etc., Land abandoned as a result of shifting cultivation is excluded. (FAO, 2007)

LAND TENURE SYSTEM

Land tenure is the relationship, be it legally or customarily defined, among people, as individuals or groups, with respect to land, together with other natural resources such as water and trees. As it is regarded as an institution by societies, its role is to regulate behavior, define and maintain rules of tenure on how property rights to land are to be allocated within societies as well as its associated responsibilities and restraints. (FAO, Rome Italy)

INDIVIDUAL LAND TENURE

This type of land tenure can be of two forms; Free hold ownership or rent tenancy. This type of ownership gives an individual right and total access to (complete freedom) on his land.

COMMUNAL LAND TENURE

Communal land is land that is held under an arrangement which provides for joint or communal use of the land (Federal Office of Statistics, 1980).

