



IMPACT OF POPULATION GROWTH ON AGRICULTURAL LAND USE IN DERIVED SAVANNA OF SOUTHERN NIGERIA

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ABSTRACT

Increase in human population has accentuated pressure on land uses. Specifically, agricultural intensification and infrastructural development have influenced major changes in land use over many decades now. This study assessed the impact of population growth on agricultural land use in a typical derived Savanna of southern Nigeria. The study specifically assessed the negative impact of population growth on agricultural land use and determined the availability of farm lands in the study area. A systematic sampling technique was adopted. The study selected four hundred (400) respondents as the sample size with an additional 5% to accommodate non-response and non-return of questionnaires. Thus, 420 questionnaires were administered while 409 were returned. Out of this, fully completed 400 copies were selected for the analysis. GIS was applied in the analysis of Land use change between 1998 and 2018 for three epochs, 1998, 2008, 2018 from available data in the Ministry of Lands. The data collected were analyzed using descriptive statistics. The result of the study indicated that agricultural land use decreased from 1998 to 2008 and 2018 in the order 66% < 58.5% < 47% respectively. While built up areas increase positively in the order 34% > 42.5% > 53%. This was due to excess demand for agricultural land as indicated by 77.75% response and demand for agricultural products (23.74% response). Hence, population influences land use and availability for agricultural production in the study area. The study recommended implementing a community development scheme and providing family planning facilities in Abuochiche, along with guidance on population control.

Keyword: Agriculture, Change, Derived Savannah, Land Use, Population growth, Sustainability

1. INTRODUCTION

Increasing human demands have placed significant pressure on arable land, water, energy, and biological resources to provide an adequate supply of food and energy requirements (Yaro, 2015). Land is very useful to man in many ways. One of the uses of land is for agricultural purposes. Farming takes the largest proportion of the total area of land

available in rural areas and the kind of farming system practiced in the rural areas depends upon the rural population size and density. Population size is dynamic bringing about continual changes in farming systems (Boserup 2008). Population is always on the increase, particularly in rural areas where there is very little knowledge of family planning. When the size of cultivable land decreases as a result of increase in population size, the type of farming system practiced is continuous and mixed cropping. This is the method by which different kinds of crops are cultivated on a particular farm land, year-in and year-out in order to increase agricultural productivity to meet the demand of the teeming population.

Most of the rural communities depend solely on agriculture. Majority of the people are illiterates, so any measure towards curbing population explosion is taboo because children are seen as assets and helpers in their farms. Religious organizations see childbearing as a duty assigned to women by God, hence in the beginning God created man and gave him authority over other creatures, and the duty to multiply and subdue the earth (Gen 1:28). Alam, *et al.* (2023) posited that the growth of population in an area reflects the history of the people in response to the environmental possibilities within the area.

Population growth is a striking problem in Nigeria and globally. Population growth over the years has put resource managers in disarray on how to find lasting solutions to the menace. It has been estimated that the population of the world would double in the near future and result in an increase of up to 150 billion people in 200 years. Wang, (2022) stated that, as the world population continues to grow geometrically; great impact is being placed on agricultural land use including arable land, water, and energy land resources to provide adequate supply of food while maintaining the integrity of our ecosystem. It is worthy of note that every growing or increasing number of people depends on a fixed amount of land resources in order to live.

Adenle, (2022) asserts that the various problems faced by man like extinction of species, poor crop yield, poverty, increased crime rate, pollution of the water system, non-availability of land for agriculture, and the need to solve these problems form the background of this study. Abuoche is one of the rural areas that experience an increase in population size and a decrease in the size of agricultural land. This increase in population size is of great concern to the people of Abuoche, considering the fixed supply of land. Thus, if left unchecked, increasing population will lead to encroachment by other land uses and this will mean little or no land to farm, resulting in reduction in food supply and income. Thus, there is a need to undertake this study in order to find out the impact of population growth on agricultural land use and suggest possible ways of curbing the menace.

Population growth has a tremendous influence on agricultural land use. Like every other developing country, the effects associated with population growth have been predominantly an issue majorly in communities, which Abuoche as a community in Bekwarra Local Government Area, is not excluded. Some of the problems observed are summarized as follows: demand for agricultural products that may result in uncontrolled exploitation for agricultural land use, Inversion of natural reserved agricultural farmlands and wildlife habitats, conversion of agricultural land use to other uses which may include; commercial, residential and industrial land use. it may lead to communal conflict in the struggle for agricultural farmland.

In recent decades, studies have shown the impact of population growth on agricultural land use. The intense impact of population growth on agricultural land use in the developing countries of the Third World has been assessed to be a major concern. This study will examine the variation and impacts of population growth on agricultural land use and how it

can be managed effectively for the socio-economic development of the study area. This study will assist professionals of several environmental disciplines on how to identify, address, and combat the menace as well as the negative impact of population growth on agricultural land use. The study will also advise the government by pointing out major strategies that will help in addressing the issues and problems associated with the impact of population growth on the agricultural sector as to enhance sustenance development. This study is aimed at assessing the impact of population growth on agricultural land use to: assess the negative impact of population growth on agricultural land use in Abuochiche, examine the factors responsible for high population growth in the study area and determine the population size and availability of farm lands in the study area.

The growth of the human population is becoming alarming that it has become a national issue; hence Oramah, (2006) observed that “the present high rate of our population growth is already contributing substantially to the ecology of the country. It highlighted that land fragmentation over farming and overgrazing has led to soil erosion. Human population growth is threatening agricultural land use, and also threatening environmental resources to extinction. As the population continues to grow, the agricultural land continues to deplete at an alarming rate. The soil in most areas like Abuochiche no longer supports plants and crop growth as in the past. The water has been polluted making it unfit for drinking and the fishes have almost disappeared. Some species of plants and animals are no longer seen. Micro-organisms which support soil fertility have been stressed and some such as earthworm would soon become a history to the generations to come. Indigenous species of both plants and animals are fast disappearing. What we see now are „stranger“ species, which appear to be very stubborn and compete seriously with plants. Some valuable species/organisms give way to stressful ones like termites that have become an enemy of thatch house owners (NEST, 1991).

NEST (1991) stressed that the rate of forest loss in Nigeria and the global environment is vast and there is reduction in soil fertility with corresponding low productivity, shrinking rainforest and shortage of arable lands, loss of plants and animals, loss of basic natural resources of food, fish, timber and medical products. Awake (2001) article titled “can earth species be saved” stated that over 11,000 species of plants and animals are facing the high rate of extinction with human beings the most endangered. In Allen (2000), the article edited by David Quammen, observed that, “anyone interested in the future of biological diversity needs to think about the pressure the people will face, and the pressure they will exert in return”. We also have to remember that the impact of homosapiens on the biosphere cannot be measured simply in population figures. The impact is a product of three variables: Population size, Consumption level, and Technology. The two variables, consumption rate and technology are factors associated with the developed world. They compared the earth with Noah’s Ark, which said that even Noah’s Ark managed to rescue paired animals, not large parcels of habitat. The author asked “what will happen after this mass extinction, destroying two thirds of all living species?

The most spectacular of over population is species extinction. In Abuochiche, valuable species have gone extinct or are under threat of extinction. Examples are “Ikpa”, “Mburi”, “Ukam-Ishi”, for plants used for rope, and "Iroko (Uloko), "Igung ", "Achuan ", used for planks. Species of animals include: the species of snake for meat like Boa, Python, Uturumu, Anem-Ushie, Irifam, and other reptiles like „Apuo, Umangichebe, and also other large animals like lion of those days, Leopards, Monkeys, Ufuo, Ogbumbum, Ugaba, Crocodiles, Sea dog, with species of birds which include Ikeneli, weaver bird (Abuochi).

What about the living space as a social problem? Musie, and Gonfa (2023), observed that the earth surface consists of 71% of sea and 29% of land. The land area including mountains, deserts, polar regions and all in 60 million square miles or 1.66×10^{15} (that is 1,660,000,000,000,000) square feet, is a seemingly immense number. Allotting, say one foot by two feet per person, it might seem that this amount of standing space would last forever. Alas, forever comes soon with an exponential expansion. Assuming a present population of 3.5 billion people and a doubling rate of thirty-five years we can multiply by two. To conclude that humans will be packed absolutely solid by the year 2025 or 2030 years from now (Musie, and Gonfa, 2023). He also noted that expansion of agricultural acreage was the principal source of increased production. This is the major problem in Abuochiche, where the people have no knowledge of fertilizer, and if they do, is it safe? Farmlands have been their medium for centuries now.

Warren, (1995) pointed out that rapid population growth increases process requirements more quickly than they can be met. Awake (2001) observes that each year, as human population continues to grow, species are becoming extinct at an alarming rate. According to the state of environment report of agriculture and land resources in Namibia, indicators of population growth include, population density, percentage of population dependent on agriculture, percentage of population using firewood for cooking and aridity index, all of which directly affect agriculture and land use. Other indicators recorded are that forest areas are diminishing, cleared land is increasing, cultivated land is increased, and cleared land is being used for cultivation.

Wrachien, *et al* (2021) observed that, “as population continues to grow geometrically, great pressure is being placed on arable land, water, energy and biological resources to provide an adequate supply of food while maintaining the stability of our ecosystem. According to the World Bank and the United Nations, from 1 to 2 billion humans are now malnourished, indicating a combination of insufficient food, low incomes and inadequate distribution of food. They further observed that there is an imbalance between the world population and the resources that support human lives. It is high time we think twice, As population continues to expand, the consequences would be on feeding the teeming population. On this note, Awake (2001) asked, “can we grow enough food?” One of these consequences of population explosion on society is malnutrition. This has been the order of the day as many countries or communities are facing the epidemic. Awake (2003) noted that Nigeria should be nutritionist. The article further stated that malnutrition is not limited to children, but it lasts long, affecting close to 800 million people and 20% of all people in developing countries or countries. It says that one (1) out of eight (8) people in the world suffer from it.

Malthus (1834) first put forward his ideas in his “Essay on the Principles of Population published in 1798. His theory is based on two fundamental principles: that if population is not checked it tends to outgrow the means of subsistence. He enacted that if population is not checked it will grow at a geometrical progression, that is in multiples (1, 2, 4, 8, 16), doubling every 25 years. That natural production from the land, even under the most favourable circumstances, increases at an arithmetical progression that is in addition (1, 2, 3, 4, 5, 6, 7, 8...). Malthus in his assertion puts it that, if human tendency to multiply or reproduce continues, human beings will reproduce and fill the world with its species. In the long run, there is bound to be food scarcity, he called that tension. Reverend Malthus suggested two kinds of checks when the population is overgrown. They are: preventive checks and positive checks: Malthus preventive check includes abstinence, (from marriage

and sex), delay in time of marriage, infanticide, contraception and abortion. According to him these checks are unacceptable because they are regarded as vice. But he accepted moral abstinence or restraint as the only ideal means of preventing birth. The positive check of Malthus includes: flood, epidemic, and earthquake, lack of food, war, famine, and diseases which would not be in the power of man to avoid. Malthus also provided a population law, which says that as food production increases, population also increases which in turn leads to too many people for the available resources, leading back to poverty.

In order to avoid the cycle of population growth and increased poverty, he suggested that the well-educated and rational persons should be able to anticipate the effect of marrying quite early and having children which cannot be cared for. As a result, he recommended the postponement of marriage and sexual intercourse so that the experience of the people can be avoided.

Malthus theory was seriously criticized as follows:

- (a) That he (Malthus) did not recognize improvements in the transport system and the opening of agricultural lands.
- (b) That he did not think of control after and within marriage. He only thought once married the couple would continue to reproduce.
- (c) That he did not consider improvement in technology.
- (d) His thinking that if income is increased, population would increase; it is not true, because in third world countries, population increases without increase in income.
- (e) That he failed to realize that the population can reduce with a raised economy.

Although this great theory has been criticized by many scholars, the theory is applied to the situation of the community which has almost or nearly exceeded its carrying capacity. The critics of Malthus see population issues from an economic viewpoint. It will be pertinent to consider that all the criticism and recommendations, if followed, have environmental implication or impact. Take for instance, the critics believed that if transportation is improved, new agricultural land would be opened, population growth would be curbed, but they forgot that transportation is “necessary”. As more agricultural land is opened, the more the vegetation would be cleared away.

Technology is the major problem the world is facing today. The level of technological improvement (growth) in the world today has come with environmental degradation. The clamours about Fault air are caused by what? The ozone layer depletion and hole in the ozone layer over Enteric (South American) is caused by what? The war against nuclear weapons is a result of what? Of course, technology is not bad but it is not a substitute for population control. Let it be mild. Talking of improved income, this is exactly what has caused overpopulation in Abuochiche. Since the people are mostly farmers, and with the help of fertile land (soil), the people thought marrying more wives and having more children would be a source of income as the “farmers” would put their wives and children into their farms. So it is not a comfortable criticism, because it is a factor in population growth in Abuochiche, who constitute a greater number of illiterate men and women. The critics failed to acknowledge the fact that as technology increases environmental pollution and degradation increase and the quality of agricultural land use reduces, the environment and life deteriorate.

Although the study is not on allocation of uses of land, Von Thunen developed a theory of location and land which deals with allocation of uses to land in terms of rents in a competitive bidding process. Von Thunen asserted that the crop that yielded the highest return would be given the first priority. Take for instance; the crop that provided/yielded the highest return is cultivated on the land (fertile land) that is considered or converted to rent (monetary value) has the highest price. Equating the theory of Von Thunen with the situation

in Abuochiche, it is noted that the most valuable crop which is yam and cassava have been and are being allocated to the most valuable (fertile) land which would make it yield the highest return. This resulted in the opening of new lands, and forest resources were destroyed, water resources also have been deteriorated for rice cultivation. Von Thunen considered the distance from the market. It is inferred that prices reduce with increase in distance from market, but in this study, the distant places are allocated to the most valuable crops that yield the highest return. This is because the distant land is more fertile than the short distant places which are allocated to women who grow less important crops like groundnuts.

In an agricultural society like Abuochiche families extended well beyond the small nucleus of parents and children and included a large number of relatives who shared the responsibility of caring for young ones. Children were further thought to be economically beneficial since later on they could work for their parents on their farmland and take care of them. All these caused fertility to become higher so the birth rate may have gone up to about 40 per thousand, but for several reasons the death rate must also have increased. At this period Peters inferred that the agricultural diet was less healthy; village life by bringing large numbers of people into proximity resulted in a contamination of water and soil which often caused epidemics. Trade, while favouring contacts with other people, also facilitated the spreading of diseases; finally, the introduction of warfare at times was a determining factor. This period corresponds to the large-scale opening up to agriculture of South and East Asia and the land around the western Mediterranean; these regions were the main centres of population growth.

It has been very clear that overpopulation in Abuochiche has brought about stress on agricultural land resources. This problem as noted has also contributed to a lot of social and economic problems in the community. Malthus (1834) put forward his ideas in his assertion that, if human tendency to multiply or reproduce and filled the world with its species continues to grow, there will be great pressure on our natural environment but if there is a drastic change in the perception of people towards child bearing, a time will come when we will attain a zero-growth rate in population and the environmental problems would be reduced. Studies like this create awareness and bring to focus people's minds on dangers of overpopulation and possible solutions might be provided.

2. MATERIAL AND METHODS

2.1 Study Area

The study area is a typical agrarian community-Abuochiche, the headquarters of Bekwarra Local Government Area in Cross River State (Figure 1). It has an area of 306 km² and a population of 6,248 (National Population Commission (NPC) 2006). Hence Abuochiche is within the savannah ecozone having equatorial climate characterized by two seasons rainy and dry with longer dry period and uniformly high temperature with the mean annual temperature varying between 26°C to 36°C. Abuochiche has relative humidity which varies between 75% to 95% with highest and lowest values in July and January respectively except between late November and January. Abuochiche is bounded on the north by Benue state, bounded on the south by Ogoja Local Government Area, and bounded on the east by Obudu Local Government Area, and west by Yala Local Government Area (Figure 2). The major activity in Abuochiche is agriculture. Other economic activities include tapping of palm wine, palm oil production, palm kernel, broom, medical herbs, games, trading (small scale

business) and so on. The soil types vary. It is mainly loamy and sandy soil and also clayey in other areas.

The population of this research work covers all the areas in the community which cuts across all the five (5) units in the community including Abuochiche, Ayage, Anyikang, Bewo and Itekpa. The population of the study consists mainly of farmers, traders and civil servants representing the various units. Why this choice is necessary is because almost everybody in the community, whether trader, civil servant or student, one time or the other engages on agricultural activity and everybody mostly the active age contributes to high population growth leading to agricultural land resource depletion.

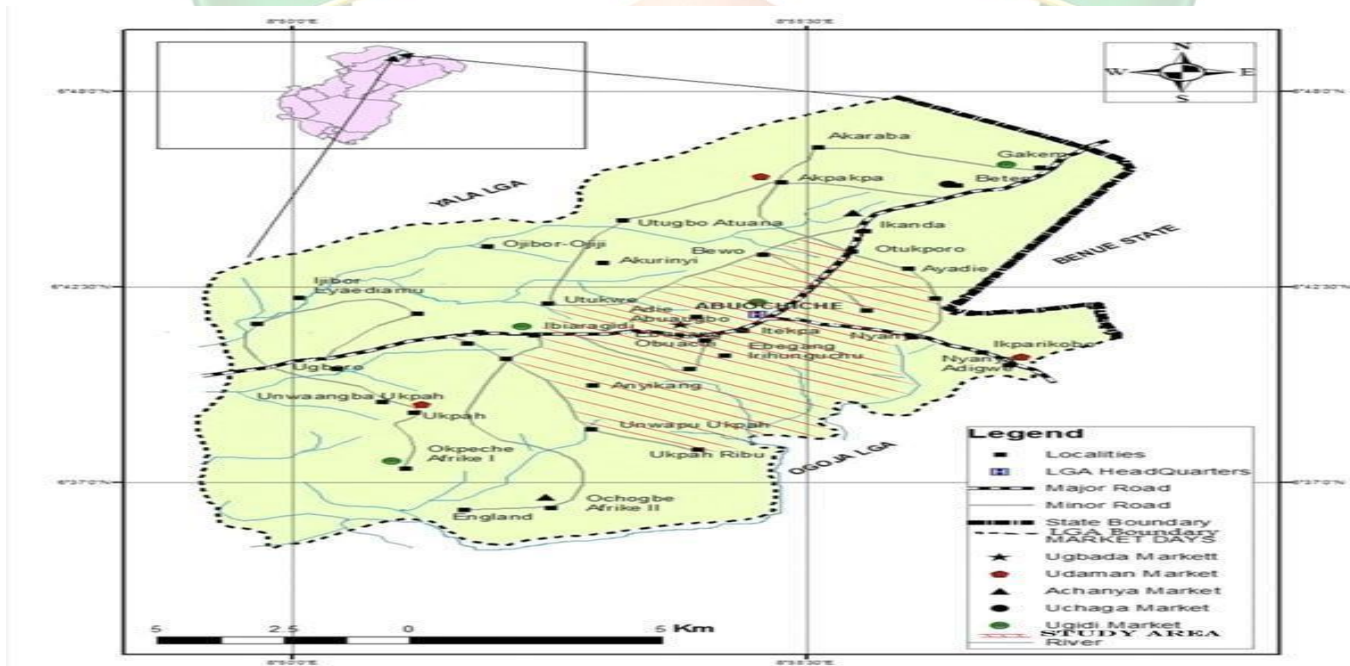


Figure 1: Map of Bekwarra showing the Study Area
Source: author's Field Survey, 2018.

2.2 Methods

The research design is descriptive in nature that evaluates the impact of population growth on agricultural land use. Questionnaire was the medium used for data collection as a primary source of information for the study. The study area consists of five communities with a population of 6,248 (NPC 1996). This was projected from 1996 to 2018 with an annual growth rate of 2.5 percent. With increase in the existing population, hence the application of Yaro Yamane formula to select a sample size was adopted as a working tool. Therefore, 400 samples were selected, thereafter, 5% of the total sample was added to accommodate non-responses and non-return of questionnaire. Thus, a total of 420 copies of questionnaires were administered, out of this, 409 were returned and 400 completed filled copies were used in the analysis.

The researcher adopted the systematic random sampling technique in the course of administering the questionnaire. An interval of 5 households was used to effectively distribute the questionnaire within the communities selected. With this technique, regular intervals were maintained. This technique is a procedure by which items are selected at some regular interval. Moreover, the Geographic Information System (GIS) by the Ministry of

Lands of Cross River State was used in the analysis of land use cover/change in three epochs between 1998 and 2018 of a ten year interval. That is 1998, 2008 and 2018. The data were analysed using frequency, means and simple percentages and presented in charts and Tables.

3. RESULTS AND DISCUSSION

3.1 Socio-demographics

Table 1: Socio-demographic Characteristics of Respondents

S/N	Research Item	Frequency	Percentage
Sex Respondents			
1	Male	300	75
2	Female	100	25
Age of Respondents			
1	18-28	133	33.25
2	29-38	137	34.25
3	39-48	75	18.75
4	49 and above	55	13.75
Marital Status of Respondents			
1	Single	140	35.00
2	Married	185	46.25
3	Widowed/separated/divorced	75	18.75
Educational Attainment			
1	Non-formal	86	21.5
2	Primary	116	29.00
3	Secondary	100	25.00
4	Tertiary	59	14.75
5	Others specified	39	9.75
Occupational Status			
1	Farming	159	39.75
2	Business	63	23.75
3	Civil servant	83	20.75
4	Others specified	95	15.75
Household size			
1	1-5	133	33.25
2	6-10	178	44.5
3	11 and above	89	22.25
Total		400	100%

Source: Researcher's Field Survey, 2018

Table 1 show that the proportion of male respondents (75%) is higher than the female counterparts (25%). The result also shows that 34.25% of the respondents are within the age group of 29-38 years, 33.25 are within the age group of 18- 28 years, which means that the active age participates in agricultural activities in the area. Marriage status shows that a large proportion of the respondents (46.25) are married, while 79% of the respondents have at least primary education. Occupation is a key determinant land use pattern. The survey shows that 39.75% of the respondents are farmers with household size of between 6 to 10 persons serving as main source of farm labour.

3.2 Factors responsible for Population Growth

Population of Abuochiche is increasing rapidly. Rapidly increasing population may result due to the effect of three important factors. They are birth rate, death rate and higher net migration. Information on the factors responsible for population growth in the area is presented on Table 2.

Table 2: Factors responsible for high population growth

S/N	Factors	No. of Respondents	Percentage
1	Increase in birth rate	100	25.0
2	Migration of people from adjoining communities	132	33.0
3	Those seeking civil job	89	22.3
4	Civilization and others	79	19.7
Total		400	100%

Source: Researcher's Field Survey, 2018

From the analysis, the factors responsible for high population growth are presented in Table 2. Out of the 400 respondents, 100, representing 25.0% of respondents confirmed that increase in birth rate is a major factor responsible for high population growth; 132 representing 33.0% which is the highest said migration of people from adjoining communities are factors responsible for high population growth, while 22.3% and 19.7% of respondents said those seeking civil jobs, civilization and others specified (polygamy, development) are also factors responsible for high population growth in the study area. This observation aligns with existing studies highlighting that high fertility rates, particularly in developing regions, are a significant driver of population growth (Bongaarts, 2017).

3.3 Effects of Population growth on Agricultural Land Use

There is considerable pressure on the agricultural land, and it is increasing at a considerable rate as a result of population growth and pressure which is one of the area's major challenges. It is the periods within 2008 to 2018 that the Abuochiche community witnessed several economic, social, cultural and political transformations and this has attracted more people to the study area. Information on agricultural land use change due to population pressure is presented on Table 3.

Table 3: Agricultural Land Use Change Status of Abuochiche (1998-2018)

Year	1998		2008		2018	
	(area sqkm)	%	(area sqkm)	%	(area sqkm)	%
Agricultural land	201	66	176	58.5	143	47
Built up area	105	34	130	42.5	163	53
Total area	306	100%	306	100%	306	100%

Source: Ministry of Lands and Survey, 2018

Table 3 shows that agricultural land area in 1998 was 201 sq km representing 66% of the total land area. Between 1991 and 2008 agricultural land areas declined to 58.5% while in 2018 agricultural land area further declined to 47% of the total land area. This shows that there is a steady decline in the area coverage of agricultural land use. The decline is happening at the instance of continuous influx of people to the Abuochiche community. These corroborate the work Shabu, *et al* (2021) and further explain the continuous upward trend in reduction of agricultural land use change to other uses. This continuous conversion has several consequences on the study area and therefore caution should be applied in order to mitigate the negative impact caused by overpopulation on agricultural land use. Information on the agricultural land use change to other uses is presented on Figure 2.

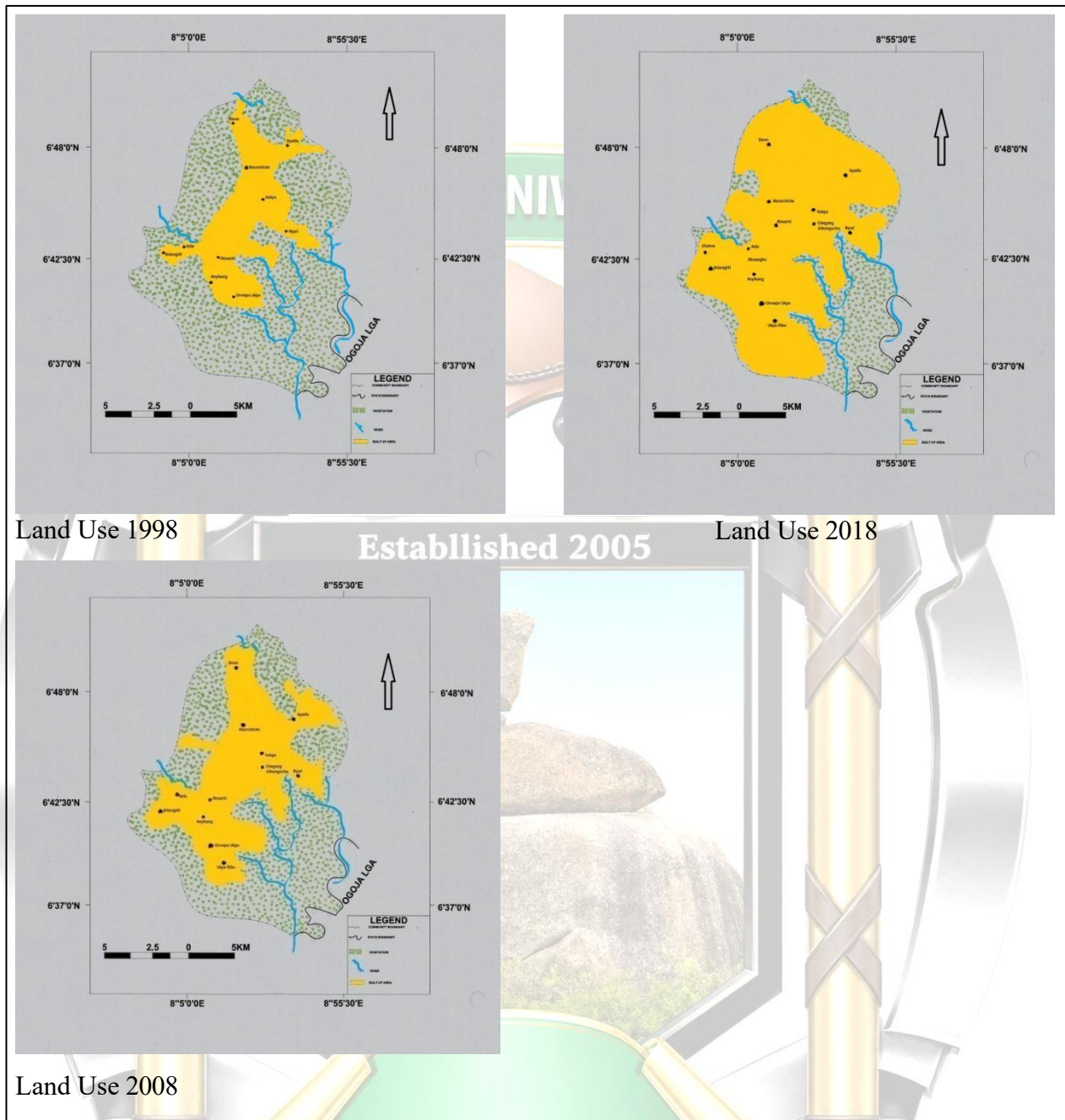


Figure 2: Agricultural land use Change (1998-2018)

Source: Ministry of Lands and Survey, 2018

The result of the study indicated that agricultural land use has a decreasing trend from 1998 to 2018 within the three epochs (1998, 2008 and 2018). In 1998 and 2008, agriculture land use decreased from 201 sq.km (66%) to 176sq.km translating to 58.5% and further decreased to 143sq.km (47%) in 2018. Thus, the study corroborates with the findings of Yaro, et.al. (2014) that there is a decrease in agricultural land use even in the urban area as infrastructural development competes and displaces agricultural land use. The study shows built up areas increasing significantly in the order 34%>42.5%>53% in 1998, 2008 and 2018. These findings also agree with Mohanty, (2008); Yaro *et.al*; (2012, 2014, 2015 and 2016), and

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Shabu, *et al*, (2021) that despite the growing yearnings for food security, agricultural land has been impacted negatively by population growth. In many areas particularly in the sub-urban environment, agricultural land has been converted to housing and has led to changing patterns of land use. There is also degradation of the environment due to infrastructural development where land meant for agriculture has been defaced with abandoned infrastructures. As opined by Population Action International and Population Justice Project (2011) and Yaro *et.al*, (2015), the impact of population growth on the environment is mediated by consumption, technology, urbanization and other factors. The global economy is knowledge driven and food system efficiency is dependent heavily and directly on agricultural technological innovation in relevant sectors.

Table 4: Population pressure on agricultural resources

S/N	Effects	No. of Respondents	Percentage
1	Loss of biodiversity	48	12.00
2	Over exploitation of agricultural resources	86	21.50
3	Excess demand on agricultural products	95	23.75
4	Reduction of farm lands	100	25.00
5	Conflict and decline in soil fertility	71	17.75
	Total	400	100%

Source: Researcher's Field Survey, 2018

Table 4 shows responses of population pressure on agricultural resources. That is (impact of overpopulation on agricultural land resources). The result reveals 12.0% of the respondents affirming that Population pressure leads to biodiversity loss, 21.5% indicated over exploitation of agricultural resources, 23.75% indicated excess demand for agricultural products, while 25% showed reduction of farm lands and 17.75% attested for conflict and decline in soil fertility as a result of population pressure.

Table 5: Effects of human activities on agricultural land resources

S/N	Effects	No. of Respondents	Percentage
1	Plant and animal extinction	80	20.00
2	Environmental degradation	61	15.25
3	Soil erosion	70	17.50
4	Decline in soil fertility	89	22.25
5	Farm land fragmentation	100	25.00
	Total	400	100%

Source: Researcher's Field Survey, 2018

From the information presented in Table 5, 20.00% of the respondents attested that plants and animals go extinct as a result of human activities on agricultural land use. Followed by 15.25% mentioned that this action leads to environmental degradation. While 17.50% reported that human activities also lead to soil erosion which affect agricultural productivity in the study area, another 22.25% respondents indicated decline in soil fertility as one of the effects of pressure on agricultural land resources. Soil fertility decline will mean declined agricultural activities in terms of crop production. Also, 25.00% of the respondents reported increased pressure on land due to population growth which has resulted in land fragmentation in the area.

Table 6: Effect of over cultivation on farm lands

S/N	Effects	No. of Respondents	Percentage
1	Low productivity	133	33.25
2	Loss of soil nutrients	62	28.5
3	Stunted growth	89	22.25
4	Others	116	16.0
	Total	400	100%

Source: Researcher's Field Survey, 2018

Table 6 above illustrates the effect of over cultivation on farm lands. The analysis shows that low productivity, loss of soil nutrients and stunted growth took the lead with 33.25%, 28.5%, and 22.25% of the respondents respectively.

Table 7: Evidence of shortage of farm lands

S/N	Evidence	No. of Respondents	Percentage
1	Competition for farm lands	103	25.75
2	Conflicts amongst farmers and communities	69	17.25
3	Shortage of food supply	83	20.75
4	Low income input	90	22.5
5	Change in Cropping system	55	13.75
	Total	400	100%

Source: Researcher's Field Survey, 2018

The evidence of shortage of farm lands in the study area as presented in Table 7 shows that 25.75% of the respondents affirmed competition for farm lands. 17.25% said that shortage of farm lands caused conflicts amongst farmers and communities. 20.75% of the respondents mentioned shortage of farm lands causing shortage of food supply in the area. Another 22.5% of the respondents agreed that it led to low income while 13.75% of the respondents said it led to change in cropping system

Table 8: Agricultural practices in the Area

S/N	Agricultural Practice	No. of Respondents	Percentage
1	Bush fallowing	154	38.5
2	Mono-cropping	128	32.0
3	Mixed-cropping and mixed farming	77	19.25
4	Crop rotation	41	10.25
	Total	400	100%

Source: Researcher's Field Survey, 2018

Analysis on the agricultural practice in the study area that supports agricultural land conservation and sustainability is presented in Table 8. 32.0% of the respondents practice mono cropping while the majority of the respondents (38.5%) practice bush farming for land conservation and sustainable crop production activities. Although with the current rate of population growth, the fallow period has declined from 7 - 10 years and above to less than 5 years which may not allow the land to fully regain its fertility status. There is a need for farmers to adopt efficient farming practices such as mixed cropping and mixed farming (19.25%) crop rotation (10.25%), for the purpose of sustainable agricultural resource exploitation.

Table 9: Level of sustainable farming practices in the study area

S/N	Responses	No. of Respondents	Percentage	Mean
1	SA (4)	200	50.0	
2	A (3)	133	33.25	
3	D (2)	47	11.75	
4	SD (1)	20	5.0	
	Total	400	100%	3.28

Source: Researcher's Field Survey, 2018

The analysis in Table 9 displayed the responses on the level of sustainable farm practice in the study area. Majority of the respondents representing 50.0% with mean value of 3.28 agreed strongly that the current farming practices used in conserving agricultural land are on a short run sustainable but might not be able to conserve available agricultural land in the long run due to population increase leading to pressure on land. With this assertion, there is a need for the adoption of more efficient farming practices for sustainable agricultural activities.

4. CONCLUSION

The study clearly shows that increase in population in Abuochiche Community has brought about stress on agricultural land resources. This problem has in several ways introduced a lot of social and economic issues in the well-being of the community. Agricultural land use pattern in the area is as a result of the unending pressure mounted by increase in population growth. This has brought about intensification in farming. It is a complex problem. Farming systems such as shifting cultivation had to be abandoned for continuous or mixed cropping systems. This is as a result of the limited supply of land in the area. The negative impact of population pressure has resulted in the fact that our savanna is gradually going into extinction, meaning no benefit from forest; there is degradation of soil and loss of soil nutrient due to population pressure on farm lands. It has also led to migration of people, because, certainly land is not enough for the entire population. Thus, able bodied men and women migrate to other places in search of job opportunities. Lastly, if the mindset of the people is redirected towards the control of child bearing and other factors responsible for population growth, time will come when the entire society will attain a zero-growth rate in population and the environmental problems would be reduced. A study like this will create awareness and bring to focus people's minds on the danger of overpopulation and possible solutions might be provided.

5. RECOMMENDATIONS

It recommended that land use plans should be developed in collaboration with the government and the community. Land use zonation for different land use activities should be given priority. Also land use intensification should be encouraged through the provision of inputs such as organic fertilizers and improved seedlings to improve productivity and reduced extensive mode of cultivation.

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