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## **Effects of Agricultural Practices on Residential Land Use in Ipinsa Town, Akure, Nigeria**

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### **ABSTRACT**

*Agricultural practices have environmental effects that affect a wide range of other land uses such as residential, transportation, commercial land use, etc. Understanding the contribution of various agricultural practices to the range of other land uses would help inform choices about the most beneficial agricultural practices. This study used stratified random technique in selecting of the respondents (farmers, rulers, market women and residents) for the study. The data was analysed with the use of descriptive statistics and chi-squared analytical method for the bivariate analysis. The result revealed that more than half of the respondents are farmers. The paper suggest that land use zoning, improve transportation, technological innovation, provision of agricultural input at a subsidized rate and awareness of the negative impact of the activity by the government will improve agricultural practice and land use planning in Nigeria.*

**Keywords:** Land Use Planning, Agriculture, Residential Land Use, Food Crop, Farmers, Physical Planning, Development.

### **1.0 INTRODUCTION**

Agriculture is the production of food, feed, fiber, fuel and other goods through the systematic raising of plants and animals. It encompasses farming, tending of orchards and vineyards and ranching. Ordinarily, agriculture means the cultivation and tillage of the soil of a field, in order to prepare a suitable seedbed, eliminate weed growth and improve the physical condition of the soil. Agriculture in Nigeria is a major branch of the economy in Nigeria, providing employment for 70% of the population. The sector is being transformed by commercialization at the small, medium and large-scale enterprise levels. Major crops include beans, sesame, cashew nuts,

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cassava, cocoa beans, groundnuts, gum Arabic, kolanut, maize (corn), melon, millet, palm kernels, palm oil, plantains, rice, rubber, sorghum, soybeans and yams.(NOUN, 2003)

In Nigeria, agriculture is one of the country main stay of the nation's economy and has contributed significantly to the economic growth and development of the country. This has helped in areas of provision of employment, raw materials for agro-allied and agro-processing industries, as a good foreign exchange earner and of course a sustained source of income for the farmers etc. Nigeria is an agrarian nation who is regarded as "Land surplus" economy and also went ahead to claim that there was plenty arable land to sustain agriculture development in Nigeria for a long time provided the constraint posed by unavailability of water could be minimized left to the protagonist of "Surplus Land", the panacea for shortage in food crop outputs in the country is simply putting more arable land under cultivation (FAO, 2007).

Obateru (2005) viewed land use as a science and art of space use organization. This involves the location and allocation of urban and rural land classified in to residential, commercial, industrial and recreational (open space). This is for the purpose of creating physical environment that is orderly, economically, functionally, efficient and aesthetically pleasing for living, working, recreation and circulation. The residential use has an indisputable influence on spatial distribution of all other urban sub-system with a dominant emphasis on built environment. Thus, In order to assess the Earth system consequences of agriculture practices in our environment, both the positive, social and economic benefits and the often negative environmental consequences on our immediate environment and to other land uses especially on residential land use are to be looked in to in this paper in order to provides measures to minimize the impact of agricultural practice to ensure food security, improve our economic interest rate as well as to provide an efficient, comfortable, liveable environment for the people, especially the residents of Akure, Nigeria. This was done through examination of the type of agricultural activities; determination of the level of the people's participation in agricultural practice; determination of the percentage of agricultural land use; identification of the people involvement and reasons for their participation in agricultural practices and determination of the level of impact the practice of agriculture as made on residential area of the study area.

## **2.1 LITERATURE REVIEW**

Human history is replete with a list of past civilizations, which flourished but eventually declined partly as a result of lack of proper management of their respective environments. In order to avoid a repeat of history, therefore, adequate attention must be devoted to the good management and conservation of the environment so that increased food, fibbers, and other resources can be produced at minimum cost and the risk to the survival of future generations minimized. In the absence of rational and conscious sustainable exploitation of the physical and natural resources, irreplaceable and probably irreversible damages inevitably result. (NOUN, 2009)

According to Yudelman (1989); Douglass; Conell (1992), we have always looked at the African problems mainly in the context of economic constraints. Yet, eroding soils, deteriorating range

land, dwindling forests and falling water tables, results of environmental mismanagement, are testimonies to the related crisis of ecological degradation. We therefore need to understand the inter-relationship of the sectors of the Nigerian economy so that we do not promote one development at the expense of another. Hence, sustainable development should be the overriding issue in future planning and this, among other requirements, demands adequate knowledge of sensitivity towards natural resources management. Sustainability expands the concept of development by recognizing the ecological limits imposed on achieving a given set of development objectives. "Sustainable Development is positive socioeconomic change that does not undermine the ecological and social systems upon which communities and social systems are dependent".

## **2.2 Types of Agricultural Activities**

The type of agriculture practice however, greatly influences the species composition found within and around the farm fields. Jared 2005 therefore illustrates two types of agriculture; conventional and sustainable agricultural practice with two specific agricultural methods; till and low;

- **Conventional Farming:** Used to describe a wide range of agricultural practices. In general, it is assumed to be any type of agriculture that requires high external energy inputs to achieve high yield, and generally relies upon high technological innovations, uniform high-yield crops, and high labour efficiencies
- **Sustainable Agriculture:** In general, sustainable agriculture is diversified, ecologically sound, and economically viable, socially just, culturally appropriate, and relies on the use of local renewable resources while minimizing external inputs. It ‘preserves biodiversity maintains soil fertility and water purity, conserves and improve the chemical, physical and biological qualities of the soil, recycle natural resources and conserves energy’.

Chrispeels, (1994) illustrates that there are three types of agriculture in the World; Organic agriculture, Industrial agriculture and crop agriculture.

- 1) **Organic Agriculture:** Refers to the concept and practice of agricultural farming which is an ecologically sustainable system focused on production using biological processes, it avoid the use of synthetic pesticide and genetically modified organisms (GMO) and exercise on sustainable agriculture to maintain the fertility of the soil as well as the health of the livestock raised without drug. Organic agriculture is beneficial because: organic farmers try to minimize the use of synthetic fertilizer in the production process. Instead they try to restore fertility and productivity using crop rotation, using animal manures, and by relying on humus. Those involved in organic agriculture plough and aggregate the soil of the arable land to get rid of weeds, insects and other pests. The process of pest control is however, an aggregate of many cumbersome of many processes organic pest control in fact involves allowing a minimum level of damage by pests. Then the farmer

has to introduce/encourage growth of beneficial organisms. The farmer needs to gain expertise in understanding pest lifecycle and interactions toward them off.

2) **Industrial Agriculture:** Is defined as a modern form of capital intensive farming in which the machinery purchased are substitute for the labour of human beings and animals. It requires huge amounts of innovation in agriculture machinery and their utilization, synthetic fertilizers and pesticides, genetic technology, large amount of irrigation water, and creates new market for consumption. The method of industrial agriculture is used mostly in the developed countries. However, the environmental cost of industrial agriculture is simply huge, besides pollution and soil destruction, it also consume large amounts of water, energy and chemicals.

3) **Crop Agriculture:** Crop agriculture encompasses the rigorous cultivation of produce fibber, food and feed. It also provides ingredients which are of industrial or medical use. Crop agriculture first made its appearance when hunter of the Stone Age switched over to the culture of species which were favoured. It produces new variety of crops which were derived from their predecessors by choosing seed which were comparatively larger in size and possessed other suitable features. Crop agriculture farmers are well versed in the selection of those varieties of plant which are capable of adapting themselves to the varying or fluctuating soils and climatic conditions. Thus, this type of agricultural practice is found in Middle East, Southern Europe and African countries, produced sugar beet, barley, oats, wheat, millet, forage legumes in their specific region. Dilipchandra (2012) describes agriculture is one of the most wide spread activities in the world, but it character is not uniform throughout. According to him, there are a number of ways to classify agriculture, and some of the major criteria which can be adopted include; the scale of farming, crop and livestock combinations, intensity of farming, means and ways of disposal of the farm produce, and the level of the farm mechanization. The following are the major types of agriculture in the world;

□ **Nomadic Herding:** This type is based upon the rearing of animals on natural pastures. This practice is followed by the people of the semi-arid and arid regions; they keep moving with their animals in search of natural pasture and leave a nomadic life. The type of animal reared differs from one region to the other. Northern Africa, part of Arabia and part of Northern Eurasia are the typical region of this type of farming.

□ **Livestock Ranching:** Here, the major emphasis is laid on rearing of animals but the farmer's lives a settled life. This type of farming has developed on a commercial basis in those areas of the world where large area are available for animal grazing, such as the low rainfall areas of

north America, south America and Australia. Animals are reared mainly for meat and wool and they are kept on a large scale farms called the ranches.

□ **Shifting Cultivation:** This is the type of farming adopted generally in the rainy tropics, under this system the land for cultivation is obtained by cleared off the forests with the help of slashing and burning technique and it is cultivated for a few years till the fertility declines or the land is overtaken by the weeds, etc. This is a subsistence type of farming done manually without much use of animal power or other types of power. It is the subsistence type of activity adopted by people living in the tropical forest region of South East Asia, major emphasis is on the grain crop, this type of farming is now on a decline was due to its land spoiling nature it is being discourage by the government agencies.

□ **Rudimentary Sedentary Tillage:** This is also a subsistence type of activity and it differs from the foregoing type in term of the fact that the same plot of land is cultivated continuously is cultivated year after year. Fallowing of land is commonly adopted to maintain the soil fertility and is also a farming type of the tropical regions, besides the grain crops, some tree crops such as rubber are also grown under this system.

□ **Commercial Plantations:** Though practiced over a rather small area, this type of farming is quite important in terms of its commercial value , the major products of this type of farming are the tropical crops such as tea, coffee, rubber, oil palm, etc this type of farming has developed in part of Asia. Africa and Latin America where the influence of the Europeans has been important during the colonial period. Most of the plantation was developed to provide the tropical crops to the European markets, it is a highly capital intensive farming and most the crops are tree crops.

□ **Mediterranean Agriculture:** The typical rugged relief of Mediterranean region has resulted in typical livestock and crop combination in this region, wheat and vineyards and citrus fruits are the major crops and the small animals are the major livestock reared in the region. Horticulture is a major activity of this region and most of the crops other than this plantation are grown in winter with the help of winter rains.

□ **Commercial Grain Farming:** This type of farming is a response to farm mechanization and it is the major types of activities in the areas of low rainfall and low density of population where extensive farming is practiced. Crops are prone to the vagaries of weather and droughts and monoculture of wheat is the general practice. Prairies, steppes and the temperate grasslands of South America and Australia are the main types of this farming.

□ **Dairy Farming:** This type has its origin in Europe from where it spread to other part of the world. Close approximately to the market and a temperate climate are the two favourable factors which have been responsible for this type of farming.

□ **Specialized Horticulture:** This type of farming has also developed to take advantage of a large demand for the product of horticulture and the areas of the large scale areas of urbanization and highly density of population.

### 3.0 AGRICULTURAL PRACTICE IN RESIDENTIAL ENVIRONMENT

Residential land use compasses of various housing units, housing refers to as individual separate dwelling unit to the entire residential neighbourhood complexes. Housing is more than shelter; it is a bundle of services. It is the totality of the housing environment which includes the shelter (Omole, 2001). The importance of housing to the socio-economy wellbeing of the century and the economic development of the nation cannot be over emphasized. Housing is also an issue that touches on the life of individual as well as that of the nation and great importance is ascribed to the role it plays in engendering human comfort by both nature and society. It has been universally accepted as the second most important essential human need after food since it embraces all the social services and utilities that make a community or neighbourhood a lively environment.

Residential land uses range from high density, represented by the multiple-unit structures of urban cores, to low density, where houses are on lots of more than an acre, on the periphery of urban expansion. Linear residential developments along transportation routes extending outward from urban areas should be included as residential appendages to urban centres, but care must be taken to distinguish them from commercial strips in the same locality. The residential strips generally have a uniform size and spacing of structures, linear driveways, and lawn areas; the commercial strips are more likely to have buildings of different sizes and spacing, large driveways, and parking areas. Residential development along shorelines is also linear and sometimes extends back only one residential parcel from the shoreline to the first road. Areas of sparse residential land use, such as farmsteads, will be included in categories to which they are related unless an appropriate compilation scale is being used to indicate such uses separately Housing situations such as those existing on military bases, at colleges and universities, living quarters for labourers near a work base, or lodging for employees of agricultural field operations or resorts thus would be placed within the Industrial, Agricultural, or Commercial and Services categories. (Zhou Tao et. al, 2007) In Nigeria particularly, land is still largely under the control of families, claims and villages, generally Yoruba's have no concept of ownership of land. Land to them belongs to God. In the worlds of a Nigerian chief in 1921 as related by Famariyo in his book (land tenure and agricultural development, 2007), he conceives that land belongs to a vast family of which many are dead, few are living and countless numbers are still unborn. Davies (1978) holds the view that " the land use act is unnecessary that by shifting emphasis from absolute ownership and freehold to occupancy and use, it kills incentives and undermines security to tenure and thus in compatible with modern agricultural business.

This study is concerned primarily with the effects of agricultural practice on residential land use, therefore the growth models developed by Burgess, modified by Homer Hoyt and Harris and Ullman including the Von Thunen's theory are relevant in this study. In Nigeria, there is still strong adherent to the conventional land use planning approach. Most major cities including

Lagos, Kaduna, Port Harcourt, Onitsha, Enugu, Aba and some in other parts of Niger Delta region have been developing with the conventional land use approach (Jiboye, 2005). This has generated diverse environmental problems manifesting in the form of deterioration of cities into slums, pollution, congestion, unsanitary condition and epidemics in residential environments. Therefore to focus on the impacts of agricultural practice on residential land use, the land use theory proposed by J. H. Von Thunen in 1826 called Von Thunen Theory of Agricultural land use will be chosen in this paper. According to him (Von Thunen), various factors are to be considered for the isolated state such as the consistency soil quality and climate, profit maximization by the farmers, state surrounded by unoccupied wilderness, etc which are all present in the study area. Also from one of the objectives stated in chapter one that; to examine the type of agricultural activities practiced in the study area, which will definitely determine the type of agricultural products available in the study area. Thus, different product with different methods of preservations and level of consumption also with different adverse effect on the environment, all these are provided for in this theory chosen.

#### **4.0 MATERIALS AND METHOD**

This research makes use of primary and secondary sources of data collection. The primary source which employs the idea of conducting personal interview with the farmers in the study area and the general public that are mainly residents. In addition, questionnaires which include close and open ended questions was administered to four categories of respondents that were involved in the research work; the market women/ traders, farmers (indigene and non-indigene), rulers, residents(including the landlord). The four major groups of respondents were identified as the research population for this study. Hence, a stratified random sampling technique was employed in the administration of the questionnaire to each respondent. Having strata 'A' at the right hand side of the major old road which was tarred in 1950, passing through the Village (Ibadan-Onitsha old express road), and strata 'B' at the left hand side of the road. Good representatives of each group of the respondents were randomly selected for sampling from both strata's and generalization was made in accordance with the outcome of the sampling result. 11.9% of the total population was administered within the four groups in the two strata's, this amount to 98 numbers of questionnaires for the study area.

#### **5.0 DATA ANALYSIS AND DISCUSSION OF RESULT**

The data obtained from the questionnaires were processed with the use of Statistical Packages for the Social Science (SPSS), Strata, and Epic-Info for both descriptive and inferential statistical analysis. However, statistical data analysis was carried out at two (2) levels, that is, Univariate and Bivariate analyses. The Univariate analysis, also known as single factor analysis, describing the population otherwise involved calculations of mean, median, mode, range, variance, and standard deviation which were express in tables and charts. The Bivariate analysis at the order hand was performed through the use of chi-squared ( $\chi^2$ ) to show the relationship between the data in the analysis.

However, it is very clear that the study area is one of the agrarian communities where majority of the residents based on agricultural practice for their survival and their immediate family. During the survey, it was revealing that each family of the community is liable to have his own area of land for farming. The chart below shows that the impact of agricultural land use on residential land use is 1036.6 hectares to 111.1. This is as a result of major agricultural land use that occupies 1036.6 hectares of land of the area while residential covered 111.1 hectares.

## **6.0 FINDINGS**

This research has revealed that Ipinsa community is endowed with a fertile land capable of accommodating series of the agricultural practice if it is well used and provided with the proper infrastructural facilities needed. These facilities include; good transportation system (road), water resources, electricity, etc. This research also revealed that much has not been realized from the agricultural practice as expected to be, this is associated with the use of crude implement (hoes and cutlasses) in carrying out farm activities, practising of subsistence type of agriculture by some farmers in the community, poor transportation system, inadequate government support, lack of technological application, inadequate educational facilities, inadequate preservatives facilities, etc.

From the analysis of data collected during this research, it could be deduced that there are no rules and regulations binding the use of land in the community and that the majority of the residents are farmers (male and female). Also the community is served with only a major road (i.e. old Ibadan- Onitsha express road) which is in poor state, which left the farmers with no option than to use motor cycle popularly known as Okada or foot in transporting their produce to the market. Some other major concern of the residents is inadequate government support in agricultural production, and shortage of fund to enhance production which resulted in: low production and limited market as their produce is being sold to individuals rather than companies or group of buyers. As a result, there is need for construction of roads and improvement on the existing ones to encourage agricultural activities in the community.

The study further shows that agricultural activities lacks recent innovative technologies where the forest reserves are exploited manually and bush burning cultivating system is being practiced which has brought the practice up with some environmental effects especially on the residents such as soil erosion, air pollution, noise pollution, poor sanitation ( due to animal rearing), etc. Thus, causes misunderstanding between residents. Therefore, it can be concluded that agricultural practice in Ipinsa community is primitive with regards to modern technologies, infrastructural facilities, technological knowhow, etc and has caused a lot of effects on the environment.

## **7.0 CONCLUSION AND RECOMMENDATIONS**

Agriculture offers outstanding opportunities for enhanced economic prosperity at National, State, Local and personal income levels respectively. In spites of the effort of the government of

Nigeria towards enhancement of Agricultural production as well as enhancement of sustainable development in our society, the sector still have some short falls which affect other sectors through various activities involved as we have in the case of agricultural practices in residential neighbourhood. Though, there has been consensus of opinions among the professionals (especially the planners), stakeholders, and policy makers on how to stop, control or reduce the advert effects in our neighbourhood and to the nation as a whole. The impact on local communities can be positive or negative, whether it comes to economic or environmental effect. It depends on the extent or method of agricultural practice in a community. There is no doubt that government will continue to play an active role in the agricultural sector of any nation as it solely requires adequate funding, effective management, technological innovation, transportation and communication. Therefore, with careful planning, adequate support, adequate publicity given on the effect of agricultural practices on residential land use in Ipinsa community, the negative effects on the community dwellers will reduce drastically and so, environmental degradation will be controlled.

From the study, the researcher arrived at certain findings which need to be addressed because some of these findings have negative effect on the residence of Ipinsa. The following are some of the recommendation of the study; Environmental Sustainability: Deforestation was one of the factors that lead to degradation of the environment, thus, some deforestation practices have been started in Ipinsa. The ministry of agriculture every year emphasizes on the need to plant trees. In this situation, sites to carry out the exercise are usually selected. However, they do not usually go beyond this ceremonial launching of trees planting because they do not make much effort to sustain the culture of tree planting on the environment. It is therefore important for the ministry to officially pursue this laudable exercise in Ipinsa sustaining this habit on people to call for environmental sustainability of the community.

Zoning: It was revealed that mixed land use is being practice in Ipinsa (especially residential and agriculture), this implies that there is no organ of government that is vested with the responsibility of determining how land is to be used for such purpose that may be detrimental to the environment. A body should exist to plan the land use in Ipinsa. Zoning laws should be operated in order to determine the use certain land should be put. Improve Transportation: As it was revealed during the research on this paper that the only road present in the study area has being in existence since 1950 during Awolowo's regime and it is even in a bad state. There is therefore need of construction of new roads and improvement on the existing one for easy transportation of the agricultural products to the market as well as smooth movement of the resident in Ipinsa by the government.

Technological Innovation: Mechanical exploitation of agricultural product should be encouraged instead of the manual exploitation system used. This can be done through the introduction of necessary and adequate machines for agricultural practice by the government to the farmers in the community as a means of support and to make the production a large scale produce. Agricultural Input: Government should endeavour to supply the farmers with subsidized

agricultural inputs such as fertilizer as a means of government support to the sector to provide for enough food for the community and ensure the safety of the food production.

Education / Awareness: Education should be provided to the farmers to notate them the negative impacts of some agricultural practice in our environment such as deforestation, bush burning, etc. This will allow them to know the implications of these activities and control them if not stop them. Some of these recommendations when they are addressed would help to ameliorate the effect of agricultural practice on residential land use in the study area and equally help to reduce the impact of environmental degradation in other communities facing similar problem.

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