

# Tropical Agriculture: Problems and Possible Solutions in Nigeria

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## ABSTRACT

Tropical agriculture is a major source of food, fiber and raw materials for human life. This paper analyzed major problems of tropical agriculture (physical, economical, ecological or biotic, social and political problems) focusing specifically on Nigeria in terms of cause and effect and arrived at identifying possible agricultural management techniques, which provide viable solutions to the problem. Climate, deficient soil fertility, soil erosion, availability of animal feeds, rural agricultural indebtedness, price fluctuations, pests and diseases, plant diseases, weeds, land tenure and inheritance system, religion, use of crude implements, communication, pollution and agricultural technology and political instability and conflict emergency has broadly characterized tropical agriculture practices in the nation. However, along with the solutions provided in this paper, Nigeria could still embark on sustainable production in agriculture. For instance, the use of crude implements and lack of skilled agricultural techniques has subjected farming operations to subsistence practice. Mechanized farming and its regulatory mechanisms adopted in the country through the operations of the Agricultural Development Project (ADP) have been found ineffective because of the prevailing factors such as physical, biotic, cultural and social factors. This paper, therefore recommends among other things, the adoption of a gradual adaptation mechanism to bring about many changes in the types of crops grown and the methods of farming employed and public awareness through which the farmers will be sensitized to know what constitutes setback in agricultural practice in general.

## KEYWORDS

Tropical agriculture, crops, agricultural development project, crude implements, subsistence and mechanized farming, soil erosion

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## INTRODUCTION

Agriculture is generally referred to, in its broadest form, as the practice of cultivating the soil in order to produce crops. In its primitive form for instance, in tropical regions like the Amazon Valley and Central Africa, it simply consists of growing plants in forests. In its more advanced form, however, it demands great knowledge and skill when it concerns the cultivation of crops as well as the rearing of certain herbivorous animals. By this, it is possible for a man to satisfy almost all his needs in food, clothing and shelter.



As a major sub-division of the earth's surface, "the tropics" refers to the area bounded North and South, respectively, by the tropics of Cancer and Capricorn, which is, Latitudes  $23\frac{1}{2}^{\circ}$  North and South of the equator. It is a vast area of land that embraces large parts of Latin America, Africa, India, Australia and Southeast Asia. The tropics can be resolved into three sub-continental units separated by wide expanses of the ocean. These include an American Region, an African Region and an Indo-Pacific Region.

Tropical agriculture is a major source of food, fiber and raw materials for human life. Aside from this, agriculture has been one of the basic occupations of man throughout the tropical world. Agriculture is by far the dominant source of income and employment in the tropics, especially in Africa, where about 90% of the population is rural and at least 3/4 of the rural workers are in agriculture (farming and herding). It was observed that the majority of the rural communities and mostly the poor ones among them are solely dependent on agricultural activities that include farming, food processing, fishing, forestry and trade for their daily living<sup>1</sup>. Like in the other world, agriculture in the tropics is influenced by several factors among which are physical factors that embrace climatic and topographical factors, biotic factors that include the influence of weeds, insects, fungi and diseases and cultural and social factors. Another agricultural influencing factor is economic which includes operational costs and government interference. The tropics being that part of the earth where direct overhead sun is experienced twice a year contains climates less favorable to agriculture and human settlement than those of the temperate regions, such that about 2/3 of the cultivated land is devoted to subsistence agriculture providing cereals, roots and fruits for consumption by farmers and their family themselves. Cattle are also raised mainly on a subsistence basis.

Tropical agriculture is based on subsistence where each farmer produces for himself and the family alone. His efforts are fully directed at ways to meet the basic needs of himself and the family members with a little leftover for selling. It's a situation where members of the family must produce food, clothes, shelter, working implements and any other items for use. The approach to subsistence farming varies within the tropics and is widely practiced in many tribes of the tropics, especially in Africa, tropical South and North America and Southeast Asia. This type of farming is on self-sufficient basis and farmers grow foods for themselves only and their families. Some small surpluses may be either exchanged by barter or sold for cash. This produces static societies with no improvement but a high degree of rural dependency. In most of these areas, the population is lower than the available land areas with minimum fertility. The low level of soil fertility made the farmer abandon used the land for another (a method of shifting cultivation). As a result of population increase, people migrate to those abandoned lands and this often results in soil erosion. The use of crude implements and lack of skilled agricultural techniques, such as ignorance on how to improve soil fertility and irrigation schemes is a typical characteristic of the farmers in this area. In it all, production is limited to people's needs, which minimizes levels of intensive farming.

A more advanced form of subsistence agriculture is the sedentary type which is practiced in tropical lowlands where the fallowed land is continuously used as the farmers stay permanently in a spot. The decreasing fertility of the soil is being solved by the rotation of crops grown in some places. In Southeast Asia and West Africa for example, subsistence agriculture is combined with the cultivation of cash crops like cocoa, palm oil, cotton and groundnut or with the collection and sales of forest products<sup>2</sup>.

Another form of subsistence agriculture in the tropical world is intensive subsistence agriculture. This is clearly more sophisticated than the simple/primitive subsistence type discussed earlier but does not have the attribute that is normally ascribed to commercial systems. This system is best developed and confined to the monsoon lands of Asia namely, China, Japan, Korea, India, Pakistan and Ceylon, the greater part of continental Southeast Asia and parts of Southeast Asia namely, Java, Luzon, Visayan Islands, Coastal Sumatra and Malaysia. Agricultural activities are intensive in these areas to support the dense population.

Again, although, they are able to do this on fertile lands the area available for agriculture is small. People in these areas are "land-hungry" such that every bit of tillable land is utilized for intensive agriculture. These areas can also be divided into two on the basis of the types of crops grown based on climatic, relief and vegetation differences. Thus, we have areas dominated by wet paddy (rice) as called in the area. This is little supported by animal farming that produces some manure constituents and other areas dominated by other food crops such as wheat, soya beans, barley or kaoliang and millet among others. This method was supported by crop rotation and skills in irrigation and the improvement of soil fertility with artificial manures from waste and vegetal decay.

Plantation agriculture with crops like rubber, oil palm, cotton and copra, beverages like coffee, tea and cocoa, fruits like pineapple and banana, sugar cane, hemp and juice, also is a very distinctive type of tropic agriculture and it is found in parts of Asia, Africa and tropical and subtropical America. As an initiation of colonization and Nigeria being a one-time product of colonization, has experienced this system and up till now has few like cocoa plantations, rubber plantations, plantains plantations, sugar cane plantations among others. Although this is not prominently practiced as simply as intensive subsistence agricultural systems.

Generally, the type of crop grown in the tropics includes those that can be categorized as perennial crops because of varied climate as cocoa, coffee, kola-nut and oil palm. Secondly, there are grain crops like rice, maize, millet, sorghum and so on. The third group is the root crops which include cassava, yams, cocoyam and sweet potatoes among others. The tropics also have the greater share in the world's total livestock of which main categories includes buffaloes, sheep, goats, pigs, horses and camels and chickens.

Now, having got these basic ideas about tropical agriculture, it is worth noting to examine, the systems, techniques and methods adopted in the tropics. Tropical agriculture, which is open to many influences, as discussed in the early part of this study, has obviously not been freed from problems created by these influencing factors. The effect is that this has rendered this region inadequate in responding to its population in terms of food production as it would be seen below. These agricultural problems are classified under various headings as follows: Geographical and physical problems which include climatic distinctiveness, soil infidelities and soil erosion, economic problems which include rural agricultural indebtedness and low price of tropical agricultural products or fluctuation in their prices. Another category of tropical agricultural problems is social problems which cover land management problems (including land tenure and inheritance techniques), the inadequacy of tools and use of crude implements (which could as well be classified as mechanical problems), availability of animal feeds, pollution and agricultural technology. The other category is the ecological or biotic problems of pests (insects), diseases and weeds.

### **Physical problems**

**Climate:** This is one of the sources of agricultural problems in the tropics. The tropics are a world of less favorable climates in terms of agricultural activities and human settlement than what is obtainable in the temperate zones. The tropical climate occurs within the equator-centered area characterized by warm and wet and warm with partly deficient rainfall. These dominant weather systems are characterized by quite heavy precipitation that is usually responsible for the leaching of soil nutrients. The region has high but little varying temperatures all year round. The combination of high temperature and high rainfall serves as the causal factor of organic matter decomposition with low deficient humor soils.

This distinctive tropical climate is reflected in certain another unique characteristic of the physical environment, most notably the soil and plant life. Excessive heat and moisture leached the soil and reduce its nutrients, though, despite the apparent lack of nutrients, crop yields in this area are still appreciable. For instance, species known as mega-sperms, oil palm, cocoa, coffee, banana, sugar cane and rubber are found only in the tropics. Also, grain crops such as sorghum, rice and maize are equally grown in the

tropics<sup>3</sup>. On the other hand, the gymnosperms such as wheat, rye, oats and barley cover an extensive area in the tropical world. In this regard, climate and human comfort need not be left out because it is human beings that do agricultural manual work. The general notion outside the tropics is that the climate of the tropics is too hot, too humid and too monotonous for optimum physical and mental energy. Most settled parts of the tropics have an average temperature of over 5°C higher than physical energy and twice the optimal temperature for mental energy. The wide contrast in humidity in some parts of the tropics has also been described as detrimental to human comfort. The climatic distinctions also provide areas that are being affected by drought. This climatic condition has threatened a lot of human and animal lives in Africa. Climate change as a driver engenders different effects on pests and their types<sup>4,5</sup>.

There are varieties of solutions to these climatic problems, one of which could be overcome by irrigation. This is probably the most common form of agricultural micro-climatic control practiced by man. It is used to correct the deficiencies in precipitation that usually force the farmers to migrate to another location in search of moistened soil. In this case, drought problems would be overcome and crops of varied types could be undertaken. Another possible solution could be the application of the "Greenhouse" method. This is an isolated structure where the growing of crops is done independently and under a monitoring system that permits sufficient quality and quantity of solar radiation to enter the structure for photosynthesis. The system also protects crops from the outside climate, which could be hazardous to agriculture. Another way to overcome this kind of problem could be by "hydroponics" which denotes the soil-less cropping system. This laboratory technique involves the growing of plants with their roots immersed in a water solution diluted with the necessary minerals that are essential for crop growth and development. The problem of climate effect on human comfort can be overcome by the application of technological development, which will provide air conditioners and air warmers.

Climatic conditions of the tropics also proved hazardous to animal farming in the sense that where rainfall is much, it creates floods that drown animals and kill them or drown their feeds (pastures) during the wet seasons. During dry seasons, the grass (pastures) withers so that animals become short of both food and water because dried grasses are not palatable to livestock. A possible solution could be by projecting to dam streams, controlling water supplies and conserving water that falls in raining season for use during the dry period.

**Deficiency of soil fertility:** Before one proceeds to discuss on infertility of tropical soil, it would be necessary to establish the fact that soils over different areas of the tropics differ in nature, types and characteristics and this consequently provides for deficiency in the production of certain crops in certain areas. Most of the tropical soils are relatively infertile, in which case, there are fewer areas with fertile soils. The fertility of tropical soils has been determined by both climate and biotic factors. The climatic factor largely depends on, the parent material of the soil, time and relief of a particular environment. The little fertile soils are features of some parts of tropical Asia with alluvial soils and ferruginous soils while the large infertile soils are features of tropical Africa with ferrallitic soils, vertisols and little ferruginous soils. The low organic matter content of tropical soils is a result of the heavy high rate of chemical and biochemical action as well as the abundance of micro-organic activity. As soon as any dead part of a plant or animal falls on the ground, it is attacked by insects and worms which affects an initial breakdown. The eventual decomposition that later takes place produces soluble minerals which are easily carried away by the soil water. As a result, organic matter is restricted to the surface, of which it constitutes less than 2% of the soil's organic constituent. This forms the main source of nitrogen and a significant source of some other nutrients such as phosphorus, potassium and calcium that the fertility of the soil largely depends. Moreover, organic matter helps in maintaining a good soil structure which promotes root development, by encouraging a proper balance between the water and air content of the soil. Most tropical soil does not enjoy these provisions of organic nutrients on large scale and so does not support the cultivation of varieties of crops for both consumption and exchange, including insufficient grass for pastorals.

For instance, Nigerian soils are almost infertile except in a few areas with fertile soil like parts of Yoruba and Igbo Kingdoms which are good for rubber, cocoa, palm oil and others and Kano in the North which is good for cotton and groundnut. The infertility of Nigerian soils is attached to the problem of leaching, drought, lack of maintenance and soil and wind erosion<sup>6</sup>. This infertility generally influences agricultural yields since the soils are only good for the production of a few crops.

Tropical farmers have adopted the techniques of land management such as shifting cultivation, crop rotation and bush fallowing, into cropping. In Nigeria for instance, used lands that are capable of supporting plant growth are abandoned for another. In some areas, crops are rotationally grown and bushes are abandoned to fallow so that after some time, they turn back to cultivate it again. Though, if this practice is still coupled with a lack of maintenance of soil fertility, it renders the problem unsolved because the growth and development of crops involve the withdrawal of water and plant nutrients from the soil, usually at a rate faster than this material can be replaced by natural processes.

A possible solution to the problem of soil fertility enhanced by the ignorance of the rural users could be acquired through educating the users on how well to improve and maintain soil fertility. Proper management of soils through human efforts provides appreciable crop yields. Better methods of land management too should be made known to the farmers. This may involve irrigation systems, dams to conserve water, proper fertilizer application and other means that will enhance high yields<sup>1</sup>.

**Soil erosion:** Soil erosion by wind and water has become a tremendous problem during the recent rapid development of agricultural development in the tropics. The employment of methods of land use which is unsuitable for intensive farming in the tropical environment has adversely contributed to this. The situation under consideration can be caused by numerous bad farming practices such as over-cropping, over-grazing, deforestation, slope cultivation and cultivation of dry areas<sup>7</sup>.

In most of the tropical worlds where extensive pastoral activities and shifting cultivation are practiced, for instance in Nigeria, they have proved highly conducive to erosion under the modern condition when they have been operated intensively owing to the increased human population and the increased cultivation of cash crops. The first damage by soil erosion is usually of the type known as sheet erosion (removal of soil particles by surface runoff). This developed into a small channel called rill erosion, when this is deepened and widened, it gives rise to gully erosion. An example of this is that of gullies in Akwa, Anambra State of Nigeria. Soil erosion has been very hazardous to agriculture in that it leads to mass deterioration of water supplies, loss of topsoil and decline in fertility. It also results in flooded water streams resulting from excessive runoff and this may cause damage to water supplies, communication and properties. Dams and reservoirs are filled up, bridges are damaged, navigation is hampered and even buildings around are forced to collapse. All these together, give a low yield of crops.

The following suggested measures of conserving soil will serve as a possible solution to soil erosion if embarked upon. This includes sand farming practices such as contour ploughing, terracing, strip cropping, land tillage, hillside ditch and provision of water outlets in such a way that the discharged water will not cause erosion elsewhere. Afforestation (cover plants) and mulching protect the ground from the impact of the rain, slow up the movement of water over the surface and improve soil-water permeability. Wind erosion only occurs when the soil is dry, hence, one of the chief measures for its control is the conservation of water in order to raise the moisture content of the soil. Another type of solution to this wind erosion which is predominant in dry tropical land (especially in Northern Nigeria) is the practice of growing trees to hold soils. When this is coupled with a certain level of water conservation, the wind erosion that blows away soils will be curbed.

**Availability of animal feeds:** The major indirect effect of the climate of the tropics on animal nutrition is on the quantity of food that is available to the animals. This depends mainly on effective precipitation as well as on the available natural flora in each area. In this respect, the tropical humid and arid regions represent areas with different nutritional problems. An example of this is the typical dry Northern part of Nigeria and wet Southern Nigeria. So, the middle belt serves as grass suppliers. Generally, the nutritional value of the available grass like protein, vitamins, minerals and carbohydrates is less in tropical grasslands and this affects animal production<sup>8</sup>.

Depending on the circumstances, a variety of methods is available for providing adequate feeds or improving existing pastures<sup>9</sup>. These include irrigation, pasture conservation, supplementary feeding and the growing of special arable crops for the animals. Exotic pasture species could also be introduced. For example, the giant star grass (*Cynodon* species) is recommended as a high-quality pasture grass in the Nigeria forest zone.

### **Economic problems**

**Rural agricultural indebtedness:** In many parts of the tropics, the advancement and improvement of agriculture are very slow due to the problem of rural indebtedness which has been the brainchild of the land tenure system. This indebtedness occurs in rural areas firstly when the landlords or peasants' landowners use the land as security against loans. In this case, they lease the land to money lenders when they are not able to pay the loan. They often become a tenant on the land they have formerly owned. Secondly, with the colonization of many Asian (tropical) countries, the traditional subsistence farming of the region gradually gave place to commercial farming. Thus, the more intensive nature of commercial farming entails greater expenses to the farmers who had to buy seeds, fertilizers and tools and because the food acreage was reduced to make way for commercial crops, they had to buy food as well to supplement their supplies. This makes him engage in borrowing money which is usually at an exorbitantly high-interest rate. Landlords also charge high-interest rates for land because of its value for commercial farming.

The first factor, for instance, explains the reason for rural indebtedness in Nigeria and serves as the reason the peasant farmers are constantly short of money. The situation here disallows the farmers from investing in new tools, fertilizer and better seed varieties among others. Where they have the resources, they rarely improve their farming methods because of the lack of incentives. Also, the landowners themselves did not encourage better farming practices, they were mostly not interested in agriculture and only viewed the land as a source of rent and revenue from loans. The dominance of the rural scene by ruthless landowners and money lenders has therefore kept production low and farming methods backward in many parts of the tropical areas especially in Nigeria where most agricultural activities take place in the rural areas.

The possible solutions to these problems could be achieved by enacting laws regarding ownership of lands in such a way that the peasants do not become landless tenants. Alternatively, the governments can convert the ownership of the whole Land to Government Control, in which case, there would be no individual control of the land. This was the case in Nigeria when the then military government under the leadership of General Olusegun Obasanjo, converted the ownership of Land to Governments Control with the Land Use Act of 1978. With this, those who were interested in the use of land for agricultural purposes were given at their own expense and such people would have to provide their tax clearance certificate, the real motive of wanting the land and they were not allowed to redistribute such kind when given.

The other problems which necessitate the need for borrowing could also be solved by farmers engaging in cooperative farming. In this case, they join hands together, contribute to providing enough money/capital and buy their needs at wholesale prices and sell out cooperatively. Paradoxically, the government can undertake certain organizations of buying and selling the harvest of farmers at a set

price. This enables the farmers to rely on guaranteed returns from their land. The government could also aid the farmers by directing loans to the agricultural sector, giving a large portion of the budget to agriculture to enable subsidies and incentives to farmers. This is a feature of what the present Nigerian government is doing as the largest share of the 1985 budget went to the agriculture sector. The extension of credit facilities could be made available to the rural areas of Nigeria where agricultural activities mostly take place. This will attract more people to embark on agriculture and would be able to control some factors that may affect their agricultural produce.

**Price fluctuations:** Generally, the market price of agricultural products in the tropic fluctuates and this distracts the interests of the farmers from participating for longer. Commercial agriculture in most tropical countries began with export crops such as oil palm, cocoa, sugar cane and coffee. These crops with their foreign trade orientation still dominate the tropical agricultural economy. This is subject to several limitations, chief of which is the low price paid for most tropical crops in the world market, which has resulted from the forces of demand and supply. The development of substitutes for some products has had gripping effects on demand. The ill-advised efforts of the tropical countries to increase production in the face of stagnating demand resulted in flooding the market with unwanted products. This has distracted the interest of the producers and consequently gives lower yields.

One possible way by which this problem can be minimized if not completely solved is for the government to help in stabilizing the prices of farmers' products, ensuring buying and selling of crops to boost the income of the respective farmers. This has been a feature of Nigerian agriculture for some time, some government agencies are em-placed to see to this problem through the establishment of co-operatives societies and marketing boards. Such as Cocoa Marketing Board saddle with the responsibility to educate both farmers and buyers to buy all agricultural produce and maintain world prices. However, the situation which involves price fluctuation does not affect farmers to a large extent as they are being paid irrespective of price fluctuations.

### **Ecological/biotic problems**

**Pests and diseases:** Agriculture in the tropical world faces a host of problems among which pests and diseases are one<sup>10</sup>. The humid habitat and high temperature in which the crops grow encourage rapid and widespread breeding of virulent pathogens and pests. Swollen shoot and black pod, both diseases which attack the cocoa tree in Nigeria are examples of the difficulties with which cultivation must contend. Like most crops, the oil palm tree in Nigeria is also affected by the problem of pests and diseases, especially under plantation conditions. About two decades ago, cocoa production in Nigeria was seriously affected by black pod (a fungal disease), swollen shoot (a virus disease) and menace of the capsid (insect pests). From the previous studies, climate plays a significant role in pest developmental rates and numbers<sup>11</sup>.

Today, the black pod disease and capsid have been brought under control through the application of biocides. Another example is the presence of tsetse flies in the Delta Area of Nigeria. This causes sleeping sickness in human beings. It also affects the annual production of the farmers in this area. The major significant animal diseases in the tropics are trypanosomiasis, vinder pest, anthrax, borine plenro-pneumonia, foot and mouth disease and tuberculoses. Other diseases which have been noted by veterinary medicine include blockquotes, heart-water, anoplasmosis (gall sickness), live flukes and cowpox. Poultry diseases include Newcastle diseases which could be easily transmitted by pests. For instance, trypanosomiasis is caused by the notorious tsetse fly. In areas of high forest, tsetse infestation is light in the wetter parts (South) of Nigeria, while their infections are heavy but virtually disappear under progressively drier conditions.

To enhance livestock productivity, the most urgent requirement is to eliminate tsetse flies or otherwise reduce the menace of the diseases they cause. The practical method usually adopted is to apply insecticides to the vesting sites of the flies and also remove the bush to provide no shade for them. Some of these diseases can also be controlled medically. However, the best way to fight livestock diseases is to provide nutritious food and a sanitary environment for rearing.

**Plant diseases:** Insect infection is not the only problem to crop growth and development. Plants diseases and the microscopic worms that are referred to as nematodes have an inhibit potential to damage proper crop growth, especially those crops that are found in regions of varying weather systems. The diseases in tropical and plantation crops are often affected by climate changes<sup>12</sup>. The impacts of plant disease on kinds and varieties of crops. The level of damage sometimes could be mistaken for being caused by weather anomalies. Just as with insects, control of plant diseases and nematodes cover a broad spectrum of approaches that include, the use of chemicals and varieties of resistance. In addition, plant virus diseases can be transmitted by insect carriers, which could mean the control of insects would help in disease control.

**Weeds:** This is another feature of tropical agriculture. Weeds as unwanted plants grow with planted crops and thereby give less space for the actual crops to grow<sup>13</sup>. Not only this, they even shorten the ratio of the crops grown nutrient in which case weeds uses more of those soil minerals than would have been for the crops grown. Attempts to clear these weeds also incur costs and lead to more economic problems which have already been discussed. Weed control is thus vital to agriculture in the tropics because weed decreases yields, increases production cost, interfere with harvest and lower product quality, impedes irrigation water flow, interferes with pesticide application and harbors disease organisms. In the case of animal farming, it affects the total number of animals negatively, especially where these weeds are not the type of animal pasture, in which case, they mistakenly eat it and thus lead to diseases that may result in death.

The control of weeds is important to the cropping system. The weed control methods include mowing, cultivating, smothering, burning, hand picking and crop rotation. However, the use of "herbicides"-weed-killing chemicals is more typical today. In some climes, the introduction of insects that attack only the unwanted plants and destroy them while leaving the crop plants unharmed is another method of weed control.

### **Social problems**

**Land tenure and inheritance system:** The system of land tenure in the tropics could be seen as a factor inhibiting agricultural development. In most areas, the land is communally owned and therefore cannot be freely sold. Nigeria is a typical example of a tropical world where this kind of land ownership prevails. With the system, prospective agricultural entrepreneurs with capital find it difficult in obtaining land. Similarly, those with land find it difficult to use parts of their land as loan security.

Another element of the land tenure system is the fragmentation of land into small units, where lands belong to different people<sup>14</sup>. Such small dispersed plots are difficult to work with machines considering the time to be wasted in moving equipment from one plot to another. Many geographers tended to rate this as an important factor in the development of agriculture. For instance, the problem of land tenure does not come through the priorities in developing agriculture. This is a paradoxical statement but the land tenure system has been a problem in Nigeria with the extended type of families wherein it was difficult for an agriculturalist to obtain land which he has not inherited.



To clear the way for agricultural improvement, there is a need for the government in tropical countries to control the process of change or even to step in to provide a more satisfactory land distribution system through administrative and legislative actions<sup>15</sup>. It was in light of this that Nigeria in the late seventies enacted a decree which converted land ownership to government (land use act decree) in which case whoever needs land for agricultural purposes approaches the government instead of the family owners.

**Religion:** Religions belief by some people has made them deviate from the keeping of certain types of animals. In Nigeria for example, Muslims forbid the keeping and eating of dogs and pigs. Likewise, the Hindus of India whose religion forbids killing and eating of cows. They are thus left to reproduce without any economic benefit. Some religions even use these animals in sacrificing to their gods without any economic purpose attached. This has established a link between agricultural development and religious practices<sup>16</sup>.

**Use of crude implements:** The peasant farmers who grow the bulk of tropical crops depend largely on crude and traditional implements such as hoes and cutlasses<sup>1</sup>. Mechanized agriculture came up with labour and time-saving implements such as the engine-powered plow, tractors and grain pickers are almost absent in tropical peasant agricultural practices. This implies a low average size of farm per farmer, low productivity per farmer and a high percentage of the total population engaged in farming<sup>17</sup>. This was the case with Nigeria before some mechanized types were introduced but yet has not helped the provision of high yields largely because of the high labor force, not much fertile land, the pressing need for more food by increasing population, the rough nature of some relief areas where the machine cannot plow.

In cases where poverty has not allowed mechanization, the government should support by providing loans to farmers<sup>18</sup>. Not only this, the population should have to be reduced or curtailed by birth control measures to reduce the rapid increase of people. Alternatives should also be provided to support human needs and continuous mechanization should be embarked upon<sup>19</sup>. In all, farmers could be made to forsake their holdings and adopt new farm layouts to enjoy the advantage of farming by government or otherwise centrally owned machinery. In other words, traditional systems are to be modified and revolutionary innovations ought to take place.

**Communication:** Transport too has posed greater problems in which case there is a lack of good lands and efficient transport means to link the farmers with their market and to obtain seeds, fodder and fertilizer. This is a problem facing tropical agriculture in that, there is no significant connection between communication and agricultural production. Most of the crops are heavy, perishable, or highly valuable and without good and efficient movement means to consumers. For instance, in Nigeria, most of the agricultural centers are situated in rural areas that lack good roads, while the available roads are less motor-able, no airline and even the possible railways tended to be slow in operation such that perishable goods get spoilt before it gets to their destinations.

A possible remedy to this is to extend transport networks to the agricultural centers like motorable roads and possibly airlines for perishable goods. Also, the railway should be well maintained to continue helping in carrying bulky goods.

**Pollution and agricultural technology:** Technological advancement has been the most pronounced remedy to some of these tropical agricultural problems. In areas of the tropics where industrialization is being used to supplement agricultural low yields, the negative effect of the industrial and agricultural technology in turn poses a great problem to agriculture. Technology generally plays a significant role in environmental changes, such as reflected in agricultural practice. This is well noted in damaged agricultural produce, the impact on the physical and chemical composition of the air are vital parameters for the growth of both plants and animals. The contamination of air quality is detrimental to agricultural

activities and hurts crop production Water pollution too affects some kinds of agricultural activities. The agricultural practice itself pollutes the air through the application of insecticides like DDT. Air and water pollution also pose discontent to human beings and when this affects their health, the possibility of putting huge efforts into agricultural activities is limited and this, in turn, give an adverse effect on the agricultural activities of the tropics.

### **Political Problems**

**Political instability and conflict emergency:** Another factor that has affected effective agricultural practice in the tropics (especially in Africa where Nigeria falls) has been the instability in the system of many governments. It is sufficient to say that African leaders are required to end the numerous agricultural problems facing many African countries today. In a situation of insecurity, people will not have the time to devote to farming but flee from troubled areas for the fear of killing. As a result of this displacement, many farmers have lost their farmlands in their respective home-based areas and hence find it difficult to produce indefinitely. Worst still, the resources with which to develop a new land are scarcely available to these farmers. It was gathered that 60.7% of farmers were displaced as a result of destruction inflicted on their crops by the cattle. Consequently, it was gathered that 41.1% of the crops grown in that year were of low yield, 33.9% were within average yield and 25% were without yield<sup>20</sup>.

### **CONCLUSION AND RECOMMENDATIONS**

The above are the numerous problems facing agricultural activities in the tropical world. From time immemorial, man has faced endless problems in his environment, while efforts to overcome these are devised towards modifying it to suit his convenience. Likewise, gradual adaptation is being considered to bring about many changes. The changes are focused on the manners of crops grown and the farming approach employed.

It has been pointed out that Nigeria as a tropical country is greatly prominent to these problems and this is why the country is facing deficiencies in her agricultural production. However, along with the solutions provided in this paper, Nigeria could still embark on the following. For instance, the level of literacy of rural dwellers will have to be raised. This is because literates are more receptive to changes. Many projects on agricultural programs failed because those affected by the programs are ignorant of it. Therefore, the peasant farmers will have to be educated on the values of any programs before embarking on them.

Also, more attention should be given to the world of Agricultural Research Institutes by developing available drought-resistant crops and livestock. Policies governing agriculture should be relaxed and loans should be given to farmers in kind or cash. In Nigeria, community effort is not new, to reactivate this, effort should be made to allow provision and maximum use of amenities. With this, the spirit of communalism will be re-activated in the people and this will lead to cooperative farming. Also, to avoid desertification, the environment in the Sahelian zone of Nigeria should be managed properly and bush burning should be prohibited. The grazing land capacity should be equally determined by designing their carrying capacity to avoid overgrazing, which could lead to soil erosion.

### **SIGNIFICANCE STATEMENT**

This study identified problems facing agricultural activities in the tropical world, with a view to proffering solutions to the problem for sustainable agricultural development. Nigeria as a tropical country is greatly prominent to extreme climate, deficient soil fertility, soil erosion, scarcity of animal feeds, rural agricultural indebtedness, price fluctuations, pests and diseases, plant diseases, weeds, land tenure, an inheritance system, religion, use of crude implements, communication, pollution and agricultural technology and political instability and conflict emergency. This paper suggested the adoption of a gradual adaptation mechanism to bring about many changes in the types of crops grown and the methods of farming employed and that the farmers be sensitized to know what constitutes a setback in agricultural practice in general.

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