

SOIL DEGRADATION: A CHALLENGES TO FOOD SECURITY IN NIGERIA

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Abstract

Soil degradation is the decline in soil condition caused by its improper uses or poor management, usually for agricultural, industrial or urban purposes in Nigeria. It is a serious environmental problem with negative impact on food supply. Soils are a fundamental national resource, and are the basis for all terrestrial life. Avoiding soil degradation is crucial to our well-being. this paper elucidated on the following concepts: concepts on soil degradation, causes and impacts of soil erosion through degradation of soil, the effect of poor agricultural programme on food security. From the literature reviewed the researchers affirmed that since no nation can survive without adequate investment in the agricultural sector; improving and investment in agricultural programmes for sustainable development and food security should be a priority for the Nigerian project to ensure proper food sustainability and economic growth in Nigeria.

Keywords: agriculture, degradation, food-security industrial, investment

Introduction

Soil degradation is a major problem facing developing countries and is projected to become an even more severe constraint into the future (Imoke Eni 2012). Soil degradation is a concept in which the value of the biophysical environment is affected by one or more combination of human induced processes acting upon the soil. It literally refers to the impairment of natural quality of soil components of any ecosystem. Bruce, (2005) soil degradation which is also seen as a decline in soil quality caused by human activities, has been a major global issue since the 20th century and it has remained high on the international agenda in the 21st century. The importance of soil degradation in Nigeria is enhanced because of its impact on food security and quality of the environments.

Soil degradation can be viewed as any change or disturbance to the soil perceived to be deleterious or undesirable (Eswaran, 2001). In the study area, the researcher observed loss of the biological and economic productivity and complexity of rain-fed cropland, irrigated cropland, range, forest and woodlands resulting from land uses or from a combination of processes arising from human activities and habitation patterns such as soil erosion, caused by

wind or water, deterioration of physical, chemical, biological and economic properties of soil and long-term loss of natural vegetation.

Clarification of Concepts

Soil Degradation: Soil degradation is defined as a change in the soil health status resulting in a diminished capacity of the ecosystem to provide goods and services for its beneficiaries. Degraded soils have a health status such that they do not provide the normal goods and services of the particular soil in its ecosystem (Asio, 2009).

Food Security: Food security according to Moseley and Hogan (2005) refers to the availability of food and one's access to it. We have household food security and a country's food security. In the two cases food security exist when all people at all-time have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs for preferences for an active and healthy life. Food security for a household means access by all members at all times to enough food for an active healthy life. Food security at a minimum (1) the readily availability of nutritionally adequate and safe food (2) an assured ability to acquire acceptable food in social acceptable ways. (i.e without resorting to emergency food supplies, stealing or other coping strategies). What is Soil Erosion: According to Pereira (2017) synthesis, soil erosion is one of the major causes, evidence of, and key variables used to asses and understand soil degradation. Soil erosion is a consequence of unsustainable land use and other disturbances, such as fire, mining, or intensive agricultural uses. The loss of soil may have serious impacts on the quantity and quality of soil ecosystem services, with serious economic, social and political implications.

Montgomery (2007) modifications in land use are one of the most impactful ways of accelerating soil erosion. There are 5 main types of natural soil erosion;

- i. Sheet erosion by water
- ii. wind erosion
- iii. Rill erosion – happens with heavy rains and usually creates smalls rills over hillsides.
- iv. Gully erosion; when water runoff removes soil along drainage lines.
- v. Ephemeral erosion that occurs in natural depressions.

Causes and impacts of soil erosion through degradation of soil

The most effective way of minimizing erosion is to guarantee a permanent surface cover on the soil surface, such as trees, pasture or meadow. However, compared to original forest soils, soils in pasture fields and croplands have less capacity to hold up and are more susceptible to erosion. These soils also have less capacity to absorb water, which makes flooding (and its economic, social and environmental impacts) more common (Trimble and Crosson (2010).

1. Deforestation for agriculture is one of the top causes of soil erosion.
2. Soil erosion is also caused by overgrazing, which causes flood too. Overgrazing is caused by intensive cattle raising. As plants don't have the recovery period they need,

they and up being crushed and compacted by cattle. In this process, top soil sediments are transported elsewhere. As for the remaining soil, it can lose its infiltration capacity, which means more water getting lost from the ecosystem and a harder time for new plants to grow.

3. Agrochemicals cause soil erosion and degradation. The use of chemicals under the form of pesticides and fertilizers on (often) monocultural crops is a very usual way of helping farmers improve their yields. Brady (2008). However, the excessive use of phosphoric chemicals ends up causing an imbalance of micro-organisms in the soil moisture, stimulating the growth of harmful bacteria. As the soil gets degraded, the risk of erosion increases and the sediments sweep (via the actions of water and wind) into rivers and nearby regions, possibly contaminating nearby ecosystems.
4. Construction and Recreational Activities: Setting up buildings and roads also have their share of responsibility when it comes to soil erosion as they don't allow for the normal circulation of water, instead, it runs off to flood nearby lands, speeded up erosion in these areas. Moreover, motor-based activities such as motocross also have the potential to disturb ecosystems and change (even if at a smaller scale compared with other causes) and erode the soil.

The effect of poor agricultural programme on food security

Ineffective agricultural programme brings about food insecurity, low income and unemployment. Nigerian's agriculture to a large extent still possesses the characteristics of peasant and traditional farmers who use rudimentary production techniques with resultant low yields and cultivation of most of the land. Ojeka, Effiong and Eko (2016) noted that:

More than 70 percent of the farming system in Nigeria consist of small holders' farmers, each of whom owns or cultivate less than 5 hectares of farmland, less than 50 percent of the country's cultivate agricultural land is under cultivated. Even then small-holders and traditional farmers who are rudimentary production technique are constrained by many problems including poor access to modern inputs and credit, poor infrastructure, inadequate access to markets, land and environmental degradation, research and extension services etc.

It is obvious that farmers in Nigeria are putting their best manually, but the population growth of Nigeria cannot depend on greater percentage of unskilled manual efforts.

Agu (2018) says that, today, the agricultural sector (as food security) is one of the most important in the country, it employs around 70 percent of Nigeria labour force. But the sector suffers because of low output, and it is harder to feed the increasing population. Nigeria began to import food, which according to United States department of states (2011) on country commercial guide stressed that Nigeria's total food and agricultural imports are valued at approximately 1.6 Million US dollars per year. Among the major imports from United States are wheat, sugar, milk, powder and consumer-ready food products.

Consequently, the negligence of the agricultural sector as a result of the oil boom brought about increasing the urban population at the expense of rural agricultural communities.

On the other hand, government had paid farmers low prices over the years on food for the domestic market in order to satisfy urban demands for cheap basic food products.

Abiwon (2016) observed that this policy in turn progressively made agricultural work unattractive and enhanced the here of energetic young farmers into cities in search of jobs as against working in the farm. Collectively these developments worsened the low productivity, both per unit of land and per worker due to several factors. Very often government agricultural programmes are not conclusion. Farm input such as implements, credit facilities subsidies/grants do not actually get to the farmers. Usually, the challenge of accurate data based information of the various agricultural programmes are not readily accessible and no proper feedback mechanism on programmes neither proper evaluation report.

Improving agricultural programmes for sustainable development and food security
No nation can survive without adequate investment in the agricultural sector. Proper investment in agriculture guarantee food sustainability and economic growth of a nation.

Ufiobor (2017) stressed that, Nigeria agricultural sector has been one of the pillars of the country's economy and this was sustainable farm practices. In the same opinion, Abiwon (2017) affirmed that, the Nigerian colonial economy depended on three (3) major export crops. They were cocoa, palm produce and groundnuts which accounted for 70% of Nigeria's total export in colonial times; and farm produce from Nigeria were exported to Britain and other European countries. It is obvious that agriculture provide 41% of Nigeria's total gross domestic product. There is very need to improve on the agricultural sector of the economy to boost food and cash crops production, environmental management, protection and conservation.

Nigeria is blessed country with a wide range of climate variations which favours the production of a variety of food and cash crops. The staple food crops include cassava, yam, corn cocoyam, cowpea, beans sweet potatoes, millet, plantain, banana, rice, sorghum and varieties of fruit and vegetables. The leading cash crops are cocoa, cotton, groundnut, palm oil, palm kernel, rubber etc. Livestock rearing and fishing also contribute to food sustainability and income generation. Even though the oil boom adversely affected the agricultural sector, efforts have been made to reposition the agricultural sector back to its former glory and this is gradually again grounds and needs to be encouraged and sustained.

Conclusion

The agricultural sector which provides food security and raw materials for the industrial growth is not left out of the soil degradation challenge. The challenges of agriculture on soil in Nigeria are numerous. On the other hand, agricultural activities has its major role to play in order to sustain the ever growing population in Nigeria. So much land has to be engaged for agriculture. The agricultural practice in Nigeria which is more of subsistence farming due to lack of technology does not guarantee sufficient food production, but consuming a large expense of land needed for development. This is an area that needs much consideration by the government as well as development partners.

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