

Agricultural Land Development: Panacea for Food Security in Nigeria.

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Abstract: Food and Agricultural Organization reported in 2015 that about 70% of earth is water while about 30% is land. Agricultural land in Nigeria is 37.3 % of the total land mass. The full potential of agricultural land in Nigeria has not been tapped for agricultural production in order to grow Nigeria's economic. This paper identifies the problems associated with agricultural land development in Nigeria amongst which are non-contiguosness, improper land clearing, improper soil survey for appropriate and required soil nutrients, improper land demarcation and as such it has been a difficult task to track agricultural production in Nigeria viz-a- viz quantities of crops produced per unit area. The paper went ahead to propose a land development model which if applied has the capability to alleviate poverty, generate employment, reduce insurgency and increase foreign earnings from agricultural production businesses.

Keywords: Agricultural land development, agricultural production

I. Introduction

Agricultural land development is the systematic use of scientific and technical knowledge to meet specific objectives or requirements of agricultural land. It is the process of economic, social transformation and adding or improvement of agricultural land that is based on complex cultural and environmental factors and their interactions.

Furthermore, agricultural land can be described as the area that is either arable or under permanent cropping/pastures. Arable land includes land under temporary crops such as cereals, temporary meadows for mowing or for pasture, land under market or kitchen gardens and land temporarily fallow as well as land under permanent crops that occupy the land for long periods and need not be replanted after each harvest, such as orchards and vineyards. This category excludes land under trees grown for wood or timber. Permanent pasture is land used for five or more years for forage, including natural and cultivated crops (Sustainable Agriculture, 2015). Land is measured in hectares, acres, etc. Presently, Smart farming (SF) as reported by Dieissonet. al., 2018 is based on the incorporation of information and communication technologies into machinery, equipment and sensors in agricultural production systems. This would be a mirage and not achievable in the developing world if the agricultural land is poorly developed.

Though, Nigeria has the potential to become a major player in the global economy by virtue of its human and natural resource endowments, this potential has remained relatively untapped over the years because of the shift from agriculture to crude oil and gas in the late 1960s. For Nigeria or any other country to tap into the global economy in the agricultural sector, such country's business outlook must be global as well. After more than a decade of economic growth in Nigeria, the sharp and continuous decline in crude oil prices since mid-2014, along with a failure to diversify the sources of revenue and foreign exchange in the economy, led to a recession in the second quarter of 2016. There is the need to look inwards and think outside crude oil for the country to be stable economically by considering agricultural sector for improved livelihood. The aim of the paper is to identify the problems of agricultural land development and propose a way out of the present inefficient situation.

1. The origin of land clearing

Land clearing, an aspect of land development (toiling), is the process of removing trees, stumps, brush, stones and other obstacles from an area as required to increase the size of the crop producing land base of an existing farm or to provide land for a new farm operation. The purpose of the practice is to achieve needed land use adjustments and improvements in the interest of natural resource conservation. Recently, agriculture contributed to Gross Domestic Product (GDP) growth in Nigeria in a consistent manner. The agricultural sector grew by 4.88 percent in Q3 2016 and by as much as 13 per cent in previous years, suggesting immense unrealized potential (FGN, 2017). This increment came as a result of land clearing activities embarked by the Federal government between 2013 and 2014 for the production of cassava tuber. Investments in Agriculture can guarantee food security, have the potential to be a major contributor to job creation and save foreign exchange required for food imports. Successful harvests will also help to reduce inflation and promote economic diversification. ERGP focuses on the needs of the people by prioritizing food security as a critical national objective and plans are already in place for national self-sufficiency in rice production by 2018 and wheat by 2019/2020. These can be achieved with proper agricultural land development.

2. Importance of Agricultural Land Development

Proper agricultural development has the following advantages but not limited to: -

- i. Enhancing food security;
- ii. Providing a conducive environment for agricultural production and economic returns;
- iii. Reducing poverty through rural land development;
- iv. Reducing the environmental impact of agricultural production; and
- v. Improving access to international agricultural markets.

Despite Nigeria's reputation as a petroleum resource dependent nation, Nigeria remains an agrarian economy in a majorly subsistence form. The sector provides over 40% of gross domestic product (GDP) with between 60 and 70% of the population productively engaged in farming. But large regional differences exist. For instance, in the southeast, 22% of the people live in rural areas with most of them engaged in non-farming activities (Akinsanmi, 2005).

Nigeria has about 79 million hectares of arable land, of which 32 million hectares are cultivated. Over 90% of agricultural production is rain-fed. Smallholders, mostly subsistence producers account for 80% of all farm holdings. Both crop and livestock production remain below potentials. Inadequate access to and low uptake of high quality seeds, low fertilizer use and inefficient production systems led to this shortfall. Despite a seven percent growth rate in agricultural production (2006–2008), Nigeria's food import bill has continue to rise. The growing population is dependent on imported food staples, including rice, wheat and fish (Nwajiuba, 2012).

3. Problems of Agricultural Land Development in Nigeria

Agricultural land development if properly addressed is capable of generating employment for about 60 million citizens but this projection would be a mirage if the problems outlined below have not been adequately addressed.

i. Land Tenure System

Although the Land Use Act of 1978 was meant to usher in a new land reform in Nigeria, it soon became a clog in the wheel of development over the years. This was more so because the Military Government which promulgated it also ensured it was embedded in the constitution of the country, this has led to tremendous land speculation and a sharp rise in the prices of land for urban and infrastructural development and promoted increasing inequality in land ownership and increasing landlessness among the poorer segments of the population. Even after government had invoked its rights of eminent domain to compulsorily acquire and pay compensation for land for public purposes, the tendency grew for some owners of land to refuse to vacate their land (Akin, 2009). It either degenerate to communal clash of clash between states where the land in question lies between the boundaries of two states.

ii. Poor Financing

Agricultural land development requires a large input in capital and this is not readily available as credit facilities are not easily accessible for the average farmers due to the bank requesting for collaterals. Sources of finance for land development projects can come in a variety of forms; each having its own rules, covenants, costs and risks. The optimal combination will depend on factors specific to both the developer and the development. Financing of land development can be separated into two main areas: -

(a) The initial land purchase; and (b) The further financing of development costs (John McDonagh, 2009).

Recent studies carried out at the National Centre for Agricultural Mechanization (NCAM) revealed that to clear a hectare of land costs about 250,000 in Kwara State while a hectare costs about 350,000 in Ogun State. These cost is not within the reach of the poor resource farmers and thus inability to the farmers to increase the hectares under cultivation.

iii. Poor infrastructure

Many of the basic amenities helpful for agriculture are not available to farmers and this is further hampering agricultural development. Examples of such amenities are good road networks, electricity, standard schools in rural areas, functioning health care facilities etc. Many poor resource farmers in Nigeria would rather invest their hard earned resources on their children to make sure they do not return to farming. This is not the case in the developed economies where farming activities has been handed over to children up to the fourth generation.

iv. Cost of Venture

The cost of land development is very expensive because the tools, equipment and machineries used in the process are not cheaply available. The cost of procurement and maintenance of all such equipment which might require importation of technologies or spare parts and operators is high coupled with present state of the nation's currency and this conversely affects the cost of agricultural land development.

4. Processes and Unit Operations in Agricultural Land Development

The processes and unit operations for agricultural land development have been outlined and include the followings: -

- i. Notification of availability of land: The first major step is for the farmer to know where land is available. This can be obtained through agents or land owners, In the proscribed National Agricultural Land Development Authority (NALDA), it was required that land owners (donors) should notify the authority of the availability of land and their willingness to give such land for mechanized agricultural bush clearing in writing through the Local Government Chairman;
- ii. Acquisition of land: In areas where land is donated by the community or bought from individuals or government, the first step is to acquire the land and then follow necessary and legal steps to register it;
- iii. Site visitation and selection: The farmer then visits the site to observe the location, condition and suitability;
- iv. Site evaluation: The site will be evaluated to obtain its suitability for crop production. This will involve surveys (perimeter, contour and soil to determine the nutrient status, to demarcate the farm and map out the roads, indicate permanent features such as rivers, valleys, hills, hanging cliffs, etc., show the topography of the land, depth to bedrock, drainage ability, percent slope, percent stoniness, surface stone and rock outcrops;
- v. Machinery sourcing and mobilization to the site: After the above operations, the next activity is to source for suitable machinery and then the mobilization to site for the clearing and development. Machinery can be obtained from road construction companies or agricultural government agencies as is the case in Nigeria; and
- vi. Bush clearing, monitoring and inspection: In the field as bush clearing is going on, the operation is closely monitored by experts to ensure safety (Anazodo, 1986).

Agricultural land clearing in Nigeria is predominantly poorly carried out due to non-availability of requisite machines to effectively execute adequate land clearing and development.

5. Methods for Agricultural Land development

Agricultural Land development clearing operation can be accomplished through the use of one or more of these methods: Hand, Bush burning, use of chemicals, explosive blasting and mechanical methods.

i. Hand Method: This method involves use of hand tools such as machete, hoes, axes, diggers for land clearing. However, when vegetation is thick, it is very tedious and costly. This method does not encourage mass production in agricultural production because of drudgery involved. It is also very difficult to work in the field cleared by this method because of the presence of stumps and underfoot which forms impediment to agricultural machines. Manual methods in land preparation are used where the topography is too steep, rugged, wet or rocky for mechanized land clearing and where labour is cheap and easily available, and its use is desirable to help reduce rural unemployment.

ii. Burning Method: This method of land clearing is very common in the savanna belt of Nigeria for a variety of reasons. It clears the land for cultivation and for travel; it provides grazing at the time of the year when the grass is inadequate; it drives game from cover thus facilitating their capture; man appears to enjoy the sight of a good blaze especially at night. However, preliminary results indicate that this method adversely affects the soil in that the earthworm and microbial populations decrease as do the organic matter and nitrogen content and general fertility as reported by Hopkins, 1961.

iii. Chemical Method: Stumps and regrowth can be eliminated or killed by the use of herbicides. These are artificially prepared chemicals which kill unwanted forest trees. The arboricides that contain sodium arsenite are highly poisonous and should be handled with care. Explosive blasting method is employed to remove very big stumps to avoid excessive excavation of the soil. A wood auger is used to make a hole in the centre of the big stump and an appropriate quantity of dynamite is applied and remotely detonated to shatter the wood (Nwuba, 1979). In cases of smaller stumps, the soil auger may be used to bore hole in the soil and apply the explosive under the stump. This again shatters and removes the stump upon detonation.

iv. Mechanical Method: This is employed usually when a large area of land is required because of the cost. In this method of land clearing and development, various mechanical equipment are used, such as bulldozers, tractors, rolling chopper, rake, etc. Some of the procedures for mechanical land development are surveying, knockdown of trees, windrowing, burning and removal of debris and pioneer ploughing. Survey helps to determine the size of tractor, the type and size of matched equipment and the clearing method to be used (Nwuba, 1984). Two main operations are involved in mechanical land clearing: knockdown and windrowing, and removal of debris. The knockdown is the process of pulling or pushing down of the trees. Various mechanical tools are employed for the process are bulldozer blade, the tree pusher, the clearing rake, the shearing blades, the rolling chopper, the anchor chain and the winching cable.

6. Conclusion

Agricultural land development is capable of giving the country a lift out of poverty which has characterized more than half of the Nigerian populace through increased participation in agricultural production thereby producing enough food and fibre for our developing processing industry. It is the most expensive singular operation that cannot be bore by poor resource farmers. The federal government is encouraged to privatize agricultural land development while the states provides the land in agreement with the community. This would not only conserve our foreign reserve but would go ahead to boost the country's economy through export of semi processed or fully processed agricultural products.

7. Recommendation

With proper agricultural land development, food insecurity could be resolved in Nigeria because production bottleneck which is the primary bane of food and fibre processing factories would be resolved. Agricultural land development has been one of the means of increasing food and fibre in the western world such as clearing, stump removal, field raking, ploughing, harrowing and ridging as shown in the following pictures: -



Land clearing



Stump removal



Raking of the field



Ploughing



Harrowing



Ridging

A well prepared field would increase the yield per area, reduce fatigue associated with poorly prepared field, increase the lifespan of machineries, conserves the soil nutrient and reduce soil erosion. With proper deployment of appropriate machineries for land development, agricultural field would not only bring about bountiful harvest but would also bring about reduction in global warming and refreshing environment as shown below.



Plantation outlook of a well prepared field in Abraka, Delta State, Nigeria

Furthermore, the government of the country should consider privatizing agricultural land development whereby investors would be given some area of land to be developed and leased to farmers on yearly basis at a fee to be regulated by a government agency. This would not only increase farmers' participation but more land would be brought under cultivation. This would attract Agripreneurs and youths into farming thereby reducing unemployment and urban migration in Nigeria.

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