



Research Article

Tackling the Problems Confronting Food Security in Nigeria: The Way Forward

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Abstract

Food security tends to be a global issue where food needs to be made available at all times for human consumption. Among the most affected regions in the world that is prone to food security is Africa. Nigeria is the giant of Africa with over 223 million people living in it. Food security according to the World Food Summit (2003), exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. There are several factors that are responsible for the state of food insecurity the nation is facing as at today among which is the issue of poverty. Of a truth, money plays a big role in providing food on one's table but without this money the issue of hunger and starvation sets in. This paper tends to look into the problems confronting food security in Nigeria and as well proffered solutions to them. Some of the ways forward recommended for use include provision of effective environmental management; promoting stable agricultural policy; promoting research through proper funding for improved agricultural productivity; creating an improved extension service; improved agricultural biodiversity; involvement of rural people in decision making; replacing human power with mechanical power; improve gender inequality; total eradication of corruption; increasing tractorization density; pumping more money into the agricultural sector; promoting irrigated farming system; provision of adequate credit facility; encouraging youth's participation; promoting the concept of reverse engineering; and provision of an appropriate farm transportation system.

Keywords: security, food, insecurity, policy, poverty, farmers

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Introduction

According to the World Food Summit (2003), food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Maxwell and Frankenberger (1992) reported that food security is dependent on agricultural production, food imports and donations, employment opportunities and income earnings, intra-household decision-making and resource allocation, health care utilization and caring practices.

Food and Agriculture Organization (FAO) identified food security as a world without hunger where social safety nets ensure that those who lack resources still get enough to eat (Eme *et al.*, 2014). Food security requires an available and reliable food supply at all times. At the global, regional and national levels, food supply can be affected by climate, disasters, war, civil unrest, population growth, lack of effective agricultural practices, and restrictions to trade. Government initiatives that encourage a policy environment based on macroeconomic stability and competitive markets can improve food availability.

At the community level, food security is essentially a matter of access to food. Insecurity can be temporary or chronic. It may vary with age, status, gender income, geographic location and ethnicity. Poverty among smallholder farmers and consumers is part of the causes of food insecurity. Sustainable progress in poverty reduction is critical to improving access to food by citizenry. Individuals need access to sufficient, safe and nutritious food. They need adequate health services, and a healthy and secure environment, including a safe water supply. Food security is therefore closely linked to the economic and social health of a nation. Therefore, this paper tends to bring to light the possible ways of tackling the problems confronting food security in Nigeria.

FOOD SECURITY AS APPLICABLE TO THE WORLD, AFRICA AND NIGERIA

Food Security in the World

Food security is a phenomenon which is multidimensional with economic, environmental and social aspects. The total population of the food insuring people in Asia outweighs that of Africa, 18 out of 23 nations where undernourishment is prevalent are from Africa (Ogbonna *et al.*, 2013). Food is no doubt, the most basic need for all human to survive. Although, so many efforts have been sunk in improving the quality as well as production of world food supplies, food insecurity remains prevalent, particularly in the global southern nations of Asia and Africa, and in Nigeria, malnutrition has resulted in death of many of its citizens. As a matter of fact, the failure to ensure food security has unavoidably resulted in many social problems including civil unrest and riots in many major cities of the world. Food insecurity is therefore strongly

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linked with other global issues, such as population growth, surge in energy demand and issues of climate change (Behnassi et al., 2013).

Food Security in West Africa

African Food Security Briefs (AFSB) estimated that approximately one out of every three persons living in the sub-Saharan Africa is undernourished (Akerele et al., 2013). Achieving a sustainable economic development in Nigeria and Africa at large will continue to be a mirage without well-nourished and healthy people. Countries like Sahel and Cameroon in West Africa, people faced with food crisis increased from 11 million in 2018 to 12 million in 2019. This increase is tied to acute food insecurity in Burkina Faso, Niger and Cameroon. According to the report by the World Food Programme (WFP) where a record of 5 million people were taken, Nigeria was found to have the highest number of people in crisis among the 15 countries analyzed in the region. Twenty nine (29) per cent of the total number of people in crisis were from Borno, Adamawa and Yobe States. According to the United States Department of Agriculture (USDA), Nigeria had about 50 per cent of West Africa's food insecure population in 2019. Obviously, this situation is aided by the prolonged years of terrorism the area has experienced and the debilitating impact of the shrinking Lake Chad on economic and agricultural activities. Also, the global pandemic has exacerbated the already existing challenges.

Food Security in Nigeria

Nigeria is located in the western part of Africa. It is blessed with a land mass covering over an area of 924,000 km² which is surrounded by the Republic of the Niger to the north, Benin republic to the west, Republic of Chad to the north-east, Cameroon to the east, and the Atlantic Ocean to the south (Azih, 2008). According to Omorogiuwa et al. (2014), Nigeria has about 75 per cent of its land mass suitable for agriculture, but only 40 per cent is actually cultivated. IFAD (2012) rates Nigeria as the number one producer of yam, cassava and cowpea in the world; yet Nigeria remains a food insecure nation which relies heavily on importation of grains, livestock products and fish.

Majority of the rural populace in Nigeria engage on subsistent farming on small plots of land to feed their households and relying on seasonal rainfall. Lack of access to necessary infrastructures such as roads has further worsen the rural poverty situation by disconnecting the rural farmers from the required inputs (IFAD, 2012). According to Ojo and Adebayo (2012), the agricultural system practiced in Nigeria in the 40s and early 50s was able to sustain the population and as well having surplus for export. Different regions of Nigeria specializes under the cultivation of different kinds of crops, whether food or cash crops and there was unity in the diversity. This system strengthened the country in attaining food self-sufficiency. Then, in northern Nigeria, the region was

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known for groundnut production, the western Nigeria is known for cocoa cultivation and it has the cocoa mountains, cultivation of palm plantation is common in the eastern Nigeria and the region is known for its oil palm and kernel heaps while the rubber plantation is the common practice in the mid-west. However, the Nigeria agricultural sector began a downturn when oil was discovered in 1956. When exportation of petroleum products started in 1958, interest in agriculture began to decline. The effect of the decline was gradual but steady with rising cost of food items, particularly those of staple foods.

CONCEPT OF FOOD SECURITY

Food security sits on the top of the list of targets of Millennium Development Goals (MDGs). Though, over 60 countries made great success in their effort to meet the MDG hunger target of halving the population of food insecure people between 1990 and 2015, food security has remained one of the greatest challenges in sub-Saharan Africa (Bremner, 2012). Some hunger hot spots have raised special concerns particularly in Africa. As at 2006, thirty nine (39) nations were experiencing grave food shortage and needed food aid from other nations around the world. Twenty five (25) of these highly food insecure countries were from Africa (FAO, 2006).

The term “food security” first emerged in the mid-1970s, at the World Food Conference of year 1974. During the conference food security was defined in terms of supply of food—“assuring the availability and price stability of basic foodstuffs at the international and national level” (FAO, 2006). Since the World Food Conference of 1974, the concept of food security has evolved into what is now generally agreed as the standard definition which was adopted during the World Food Summit in 1996. The World Food Summit held in year 1996 agreed that food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2008).

From this definition, the four components of food security are identified as availability, access, utilization and stability of food. Based on the practical guide of Food Security Information for Action, all the four components must be satisfied simultaneously to meet the objectives of food security. These four components can be expressed under the views of FAO (2008) and Simon (2012) as follows:

i. Availability

There has to be physical, social and economic access to sufficient and nutritious food by all people and at all times. Such food must satisfy the dietary needs and preference of the people. It is the amount of food physically available in a region or place. To a great extent,

food availability depends on the level of local production, imports, stock levels and net trade in food items.

ii. Access

This refers to economic, social and physical access to food by all people at all times. That an adequate amount of food is available at the regional, national or international level does not imply it is accessible at household level. It must be locally accessible and affordable.

iii. Utilization

Generally, utilization refers to the pattern in which the body makes use and benefits from the various food nutrients. Utilization is determined by food quality, nutritional values, preparation method and storage as well as feeding pattern.

iv. Stability

This refers to the stability of food availability, accessibility and utilization over time. All three components must be present simultaneously at all times. A person who has adequate access to quality food today is still considered food insecure if he has periodic inadequate access to food which may cause his nutritional level to deteriorate. Variation in weather conditions, political and economic instability, and price fluctuation are some factors that may impact on food security status.

Applying this Concept of Food Security to Nigeria situation

According to FAO et al. (2013), the core determinants of food security are availability, accessibility, utilization and stability. This can be discussed under the following sub-sections.

Food Availability

Availability of food plays a noticeable role in food security. Having enough food in a nation is necessary but not adequate to ensure that people have satisfactory access to food. Over the years, the Nigerian population has increased faster than the supply of food thus resulting in food unavailability per person.

Food Accessibility

The ability to have access to food depends on two major conditions, namely economic access and physical access. Economic access depends on one's income, the price of food and the purchasing power of the people. Physical access depends on the availability and quality of infrastructure needed for the production and distribution of food. Lack of

economic access to food is as a result of the increase in the rate of poverty. It is obvious that the poverty level in Nigeria is quite high with a lot of family struggling to maintain a balance diet from a three square meal which is not forthcoming as it used to be in those olden days when there was surplus of food in the country.

Food Utilization

Food utilization is measured by two outcomes indicators which reflect the impact of inadequate food intake and utilization. The first outcome is measured by under-five years of age nutrition level while second measurement is quality of food, health and hygiene. According to FAO, the measuring of the nutritional status of under-five years of age is an effective approximation for the entire population. The indicators for the measurement of under-five years of age are wasting (too thin for height); underweight (too thin for age) and stunting (too short for age). Most times, progress in terms of having access to food is not always accompanied by progress in the utilization of the food. A more direct indicator of food utilization is underweight because it shows improvement more promptly than stunting and wasting whose improvement can take a longer time to be noticeable.

Since 1990, the prevalence rates of under-five stunting and underweight have declined in some developing countries, while some countries still report a prevalence rate of 30% or more and WHO categorizes this as being high.

Stability

Stability has to do with exposure to short-term risks which have a way of endangering long-term progress. Key indicators for exposure to risk include climate shocks such as droughts, erosion and volatility in the prices of inputs for food production. The world price shocks leads to domestic price instability which is a threat to domestic food producers as they stand the chance of losing invested capital. Nigerian farmers are mainly smallholders farming mainly for subsistence, this makes it difficult for them to cope with changes in the prices of inputs, and it also lowers their ability to adopt new technologies thereby resulting in reduced overall production. Changing weather patterns as a result of climate change have played a part in reducing food supply, for instance flood in the southern parts of the country and drought in the northern parts leads to substantial losses in production and income. The interplay of all these variables determines whether an individual, household, state or nation is food secured or not. This is because sustainable food security at the household level does not guarantee sustainable food security at the state or national level.

PROBLEMS CONFRONTING FOOD SECURITY IN NIGERIA

The absence of food security is food insecurity; food insecurity on the other hand represents lack of access to enough food and can either be chronic or temporary. Adeoti (1989) opine that chronic food insecurity arises from lack of resources to acquire and produce food thereby leading to persistent inadequate diet. FAO (2010) refers to food insecurity as the consequences of inadequate consumption of nutritious food bearing in mind that the physiological use of food is within the domain of nutrition and health. When individuals cannot provide enough food for their families, it leads to hunger and poor health. Poor health reduces one's ability to work and live a productive healthy life. Poor human development destabilizes a country's potential for economic development for generations to come (Otaha, 2013). The prevalence of food insecurity can be said to be predominant in the rural areas than in the urban areas but with differences across states and regions.

The prime agents responsible for the causes of food insecurity in Nigeria as identified by Matemilola and Elegbede (2017) include low technology for processing and storage, insufficient production, gender inequality, insufficient policies and corruption, and conflicts and civil insecurity. Their study also went ahead to provide some strategies that could be used for achieving food security in Nigeria which involve the use of economic, social, environmental and technological strategies.

Among the 109 countries assessed by Global Food Security Index (2015), Nigeria came 91st in position with 37.1 score based on indices of affordability, availability, quality and safety. One of the goals of Nigerian's agricultural development policy is to ensure that there is enough food reserve at household, state and federal government levels to forestall any threat to the level of food security. Since domestic agricultural production has failed to meet up with the increasing demand for food, the government had to spend on importation to feed her teeming population. Take for example, food import increased from 19.9% in 2000 to 30.6% and 22.7% in 2011 and 2012, respectively while food export is barely 5.3 % of merchandise (World Development Indicator, 2016).

Mijinyawa (2023) in his study noted that in many instances, the ineffective means of transport puts both rural and urban communities at risk. The reason why the rural communities are at disadvantage is because the food produced and animal raised are their means of livelihood which can only be actualized if taken to a market where they can be sold. Likewise the urban populations are at a disadvantage as well in the sense that no meaningful production actually takes place in the urban areas and unless there is a supply from the rural areas which makes them to be at the risk of food insecurity. The absence of having an appropriate transportation system thereby leading to inadequate farm transportation system, constitute a great threat to the attainment of food security.

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WAYS TO TACKLE FOOD SECURITY PROBLEMS IN NIGERIA

The issue of poverty is not limited to Nigeria alone but an issue confronting the whole world which has been identified as one of the prime factors responsible for food insecurity in Nigeria. The solution to achieving food security must include decrease in the poverty level because income must be improved upon to enable people meet the basic necessities of life of which food is among. Nevertheless, decrease in poverty level may take a long time to achieve, therefore, there is need to provide a lasting solution to the problems confronting food security in Nigeria. This can be discussed under the following subsections.

Provision of Effective Environmental Management

Management of our environment should be looked into as efforts geared towards increasing agricultural productivity have led to pressure on natural resources as well as environmental damage. There should be an effective management of our environment by reducing the rate of deforestation. Trees should be planted as often as possible especially in the desert. Providing home for agricultural pests and increasing resilience to shocks and long-term climate change can help in the improvement and management of natural resources. Tree planting should be encouraged because forest trees outside the forest helps in protecting soil and water resources, promotes soil fertility and provides protection from extreme weather events.

Promoting Stable Agricultural Policy

The unstable agricultural policies of government over the years has been one of the major factors militating against agricultural mechanization practice in Nigeria. The assessment of some of these extant agricultural policies as carried out by Ogboru (2002) found out that apart from the different funding agencies, the objectives of the programmes were more or less the same; self-sufficiency in agricultural production. The inputs were basically the same; improved seedlings and chemicals, fertilizers, machinery, extension service and training as well as credit. Many of the projects are deviations from extant policies. Grandval and Mathilde (2011) in their review, remarked these policies as opportunistic, uncoordinated without plans for continuity such that successes, failures and lessons learnt in preceding programmes have not been analyzed.

In a way to address the issues raised, Oyelade and Ochin (2022) in their study provided some ways forward which include (i) All past and new policies created by government on agricultural development that are still active till date should be reviewed to identify areas of duplication of function and seek for a way to resolve them. (ii) The government either at the Federal or State levels should allow each formulated policy to end before reintroducing another one along the line which many at times is responsible for uplifting the same thing from ongoing policy thereby giving room for the duplication of function.

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(iii) Policies created by government should be richly translated for effective implementation of the programme therein, and (iv). Policies created by government should be backed up with sufficient money to make them workable and lasting. This will solve the problem of policy implementation.

Promoting Research through proper funding for Improved Agricultural Productivity

Several projects/schemes/programmes of different kinds have been established by different governments in Nigeria for improving agricultural productivity, but they have failed due to poor policy implementation. Research is really the key to development. Many of the nations that are developed today would not have reached the level they are if they have not spent a lot of money on research and development activity. Hence, agricultural productivity in Nigeria can be improved upon by encouraging research. For this reason, all Research Institutes (RIs) in Nigeria basically those in agricultural related fields should be properly funded by government for encouraging adaptive, innovative and participatory research. It is through this practice that we can make progress in ensuring food security in Nigeria rather than turning Nigeria to a dumping ground for all manners of food to be imported which have not just increased our food importation bill but as well turned us as lazy people who cannot produce these foods ourselves for consumption.

Creating an Improved Extension Service

The importance and existence of extension services in our daily research work most especially in the agricultural sector cannot be overlooked. The issue of one extension officer to attend to hundreds of farmers is not a good practice. Therefore, there is the urgent need to call for an improved extension service by encouraging and strengthening our extension service providers in the country because it is through this extension services provided to our farmers that new technologies can be transferred to them. Take for instance, the issue of storage facility which needs to be provided to enable our farmers store their crops immediately after harvesting operation had taken place. These storage facilities will help our farmers to preserve their products before taking them to the market for sale. These storage facilities will also help to provide enough food reserve for the country.

Improved Agricultural Biodiversity

Improving agricultural biodiversity through the use of improved agricultural practices will help to increase food supply in our country. Large scale farming may involve planting one type of crop on a large farmland, but with improved farming different genetically improved crop types and species may be planted on a farmland. Mono-cropping also exposes crops to both pests and diseases and also increases the use of organic fertilizers and pesticides that erode soil biodiversity. In other to achieve food

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supply at all times, Nigerian farmers as well as government should embrace this modern food production technique that comes in form of agricultural biodiversity aimed at increasing crop and livestock production.

Involvement of Rural People in Decision Making

Food security can be greatly achieved in Nigeria if the government adopts inclusive growth in its development efforts. Development at all stages of implementation should be participatory and environmentally friendly. Farmers should be considered first when it comes to people-centered agricultural development which attacks poverty with opportunities and education. It requires involving the rural people in decision making stages of agriculture productivity. The inability of government to involve these sets of people in defining and designing projects has led to the failure of some of these projects. There should be well designed social protection systems such as risk insurance scheme and community empowerment to help households sustain their resilience to shocks.

Replacing Human Power with Mechanical Power

Agricultural mechanization is about embracing the use of tool, implements, machines and equipment in carrying out agricultural activities on the field. In Nigeria today, the level of agricultural mechanization practice is low. This have made human power the most common source of farm power available for use in Nigeria agriculture.

A country whose farming and processing operations are mainly dependent on human power is bound to suffer in the area of feeding her ever-teeming population of which Nigeria is no exemption. For Nigeria to be food sufficient at all times, there is need for government to put an end to the use of human power by calling for the total replacement of human power with mechanical power which will go a long way to increase agricultural productivity, promote timeliness in operation and reduce drudgery. However, things are changing for good as the recent survey exercise carried out by the National Centre for Agricultural Mechanization (NCAM) on the level of agricultural mechanization practice in Nigeria have shown that crops like maize, cowpea, rice, cassava, yam, sorghum and palm fruit have continued to witness the use of machines for their processing operations. The more we encourage the use of machines for the processing of other crops grown in Nigeria the better it will help in increasing agricultural productivity in Nigeria.

Improve Gender Inequality

To boost agricultural productivity in Nigeria the issue of gender inequality must be properly addressed. In the days of our forefathers, men do marry many wives for the sake of producing more male child that will assist them in the farm thereby leaving their female child to do the kitchen work at home. Today, things have changed as we have women who are courageous in nature who conveniently engage themselves with the

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work of men in the farm. In view of this step, there is the need to call on agricultural machinery and equipment manufacturers in the country to consider the production of agricultural machineries and equipment that both men and women can conveniently use in the farm without posing any form of difficulty during their working operation.

In India, research work is ongoing on how agricultural tractors can be developed to suit women's convenience while operated in the farm. Nigeria should emulate such practice by ensuring we increase the number of women willing to participate in farming related activities that will involve the use of agricultural machineries and equipment in executing such tasks.

Total Eradication of Corruption

The accumulation of wealth through illegal means otherwise termed corruption have crippled so many nations in the area of infrastructural development. The more we have corrupt people in our midst the more problems we face in finding solution to the problems militating against food security in Nigeria. These corrupt people because of what they make into their personal pocket will always want to sabotage any effort put in place by government in improving the life of people. The poor stage we have found our agricultural sector in the country today is no other than corruption that has dragged us into it. The earlier we call for the total eradication of corruption in the way we practice things in Nigeria, the better for us in witnessing a positive change that will make this country among the top twenty most developed economist nation in the world through agricultural development.

Increasing Tractorization Density

There is no way we can compare the output of a tractor to that of human labour involvement in the field. Despite knowing the usefulness of tractors on the field, many of our farm operations starting from land clearing to harvesting operations are being carried out manually. This approach has reduced the rate of food production in the country thereby turning us to a nation that is food insecure.

For a nation to be food secured, FAO gave a recommendation of 20 tractors to be used in every 1,000 hectares of arable land but in Nigeria it is sad to say that we are still battling to have an average value of approximately 0.1 tractor per 1,000 hectares of arable land which can be translated to 1 tractor per 10,000 hectares of arable land. This indeed calls for great concern as we need to advise our State government to look into the tractorization density of their respective States in knowing the actual amount of tractors needed to meet up with this FAO's recommendation that will make each State in Nigeria food secured. This call is not only limited to the State government but to the Federal government as

well who has a major role to play in ensuring that the total number of tractors needed in each state are met so that Nigeria as a nation can be food secured.

Pumping more money into the Agricultural Sector

The annual amount allotted to the nation's agricultural sector have not surpassed 2% to 3% of the overall budgetary allocation over the years. Sometimes ago in year 2014, the African Heads of State met and agreed to increase the budgetary allocation of agriculture to at least 10% and yet none of them to date have intensified effort in fulfilling this agreement of the 2014 Malabo declaration. Today, nine solid years is about to pass with many of these African Heads of State putting aside such a valuable decision taken at their meeting.

It is high time, the Federal government of Nigeria set herself as a good example for other African countries to emulate by accepting this collective recommendation of theirs by ensuring our nation's agricultural budget takes up to 10% of the overall budgetary allocation. If we continue to depend on food important to feed our ever-teeming population, there is no way we can control the cost of food which is a function of foreign exchange. The best we can do is to pump more money into the agricultural sector and wisely spend it in fully reviving the sector which needs a lot of money in taking it out of the wood.

Promoting Irrigated Farming System

Irrigation which in simple term means the artificial means of providing crops grown in the field with water during off rainy season. Nigeria is known as a country whose agricultural practice is rain-fed dependent with 95% for rain-fed agriculture while the remaining 5% is for irrigated farming. Every region of the country has her own rainfall pattern which differs from one another and for a nation to be food secured food production must be geared toward all year production pattern. This can only be possible if we improve on our irrigated farming system.

Although, the practice of irrigated farming system is expensive depending on the type of irrigation system employed in the field but the long year effect will provide the nation a positive effect as the prices of food will drop and made affordable for everyone to buy. The issue of waiting for rain to fall before our farmers can start their cropping season will drastically reduce as farmers at any time of the year can start their farming operation. Therefore, we call on the Federal government to deeply look into how irrigated farming system can be improved upon in Nigeria agriculture.

Provision of Adequate Credit Facility

One of the main complains of farmers in Nigeria is the inability to access credit facility. Investing on agriculture entails the use of money to make profit and earn some money for other important use. By the time our farmers are starve of getting loan, agriculture becomes a no go area for them. This is one of the reasons why subsistence farming system is commonly practice in Nigeria and other African nations whereby farmers limit the little available money with them to what they can grow for their immediate family's consumption.

Today, we are talking about commercial farming which can only be successful if all channels of getting credit facility are easily accessed without posing any form of difficulty of getting the loan proposed by our farmers for use into agricultural practice. Therefore, our farmers must be encouraged by government in seeing to how all providers of credit facility discharges their duties in such a manner to encourage more participation.

Of a truth most commercial banks are afraid of lending to the agricultural sector because of the high risk involved in agricultural related activities, but State government could easily intervene by setting up new schemes in helping to reduce this risk so that our farmers may have all it takes to practice agriculture the way it should be when they have been provided with an enabling environment to grow their crops and as well rear their animals.

Encouraging Youth's Participation

Many of our youths today are not interested in taking over a profession such as agriculture where one has to wait for months or years depending on the crop grown or animal reared before one can start realizing the profits made from the money invested into the business. Our aged farmers are also looking up to the youths that will take over from them with little or no hope in this direction. It is so sad that the quick money business has channeled our youth's mind away from agriculture.

Our government needs to do something about this by creating more job opportunities along the agricultural sector which will encourage many of our youths to take jobs in the sector that will boost agricultural productivity in the country. We should encourage our politicians who have one consistency project or the other to deliver to their people to also empower the youths in their area with very rich youth empowerment programmes that will open their minds to agriculturally related jobs that will help in repositioning the agricultural sector of Nigeria.

Promoting the Concept of Reverse Engineering

Reverse engineering has to do with the study of a machine working principle for the purpose of developing a simpler machine that will be used to accomplish the same given task. From literature search, “reverse engineering is the act of dismantling an object to see how it works. It is done primarily to analyze and gain knowledge about the way something works but often is used or enhance the object”. The objective of reverse engineering include increase quality of parts, improves the efficiency of parts, allows for the provision of replacement of parts, and reduce production cost.

Most imported machines do come with very complex working principle which after some times breaks down thereby posing a lot of difficulties in bringing them back to their functional state. This a times cost a lot of money in doing so as they can order for the machine’s spoilt part from the country of origin. In a way to arrest this undesirable situation, reverse engineering had helped a lot in providing solution to this aspect of technical and technological challenges as we use our locally made spare parts to replace these complex machine mechanism of theirs. The concept of reverse engineering needs to be promoted as long as we wish to encourage the use of indigenously built agricultural machinery, implement, tool and equipment in Nigeria agriculture.

Provision of an Appropriate Farm Transportation System

Through the provision of an appropriate farm transportation system, agricultural mechanization technologies could be promoted as many farm equipment can be taken to the farm site for the processing of crops to finished products. Aside this, the provision of an appropriate farm transportation system will give room for the availability of new technologies to farmers; reduction in postharvest losses; and reduction in idle times of transporters and produce merchants.

Conclusion

This paper was written to identify the problems confronting food security in the country. Nigeria is food insecure as food production falls below the demand for food despite government’s effort to supplement through importation of food. One of the major challenge of food security in Nigeria is poverty. Poverty reduces the purchasing power of the people making it difficult for them to acquire their daily minimum requirement of food.

Finally, to boost agricultural productivity and ensure food security in Nigeria, the study recommends the following as ways forward: (1) provision of effective environmental management; (2) promoting stable agricultural policy; (3) promoting research through proper funding for improved agricultural productivity; (4) creating an improved

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extension service; (5) improved agricultural biodiversity; (6) involvement of rural people in decision making; (7) replacing human power with mechanical power; (8) improve gender inequality; (9) total eradication of corruption; (10) increasing tractorization density; (11) pumping more money into the agricultural sector; (12) promoting irrigated farming system; (13) provision of adequate credit facility; (14) encouraging youth's participation; (15) promoting the concept of reverse engineering; and (16) provision of an appropriate farm transportation system.

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