

ACHIEVING FOOD SECURITY IN NIGERIA THROUGH QUALITATIVE AGRICULTURAL EDUCATION

Ajao, I.S.

Corresponding author-ajao.ibrahim2104@fcesoyo.edu.ng 08028519721

Department of Primary Education, Federal College of Education (Special), Oyo

Abstract

Availability of adequate food is non-negotiable for the survival of humanity. Food is one of the essential needs of life. In view of this, adequate attention must always be given to food production. Therefore, this paper looks at how food security can be achieved through qualitative agricultural education. The paper discusses the concept of food security and its determinants, relationship between agricultural education and food security, importance of consistent food production to humanity, adverse effects of absence of food to humans, concept of qualitative agricultural education and how it can be promoted. The paper also discusses practical-oriental agricultural education, agricultural mechanization as a panacea to food insecurity, as well as the way by which qualitative agricultural education can serve as a solution to food insecurity in Nigeria. The paper concludes that food production from both crop and animal sources must be a continuous process to guiding against hunger and malnutrition. It was recommended among others that, periodic agricultural awareness and exhibitions should be organized in all parts of the country.

Keywords: Food, Security, Qualitative, Agriculture, Education.

Introduction

Food is a fundamental need which provides an individual with necessary nutrients to survive and to participate actively in the society. Food is only one of the needs that people must make efforts to meet. Therefore, a family is food secure when its members do not live in hunger or fear of hunger. High cost of production, policy ineptness, high exchange rate and increase in population are the factors that cause inflationary pressures on food prices and they are the reasons why food security in Nigeria has worsened. Food security in Nigeria is a trans-disciplinary concept which is characterized by four components and supporting elements related to food availability, food accessibility, food utilization and food stability. Agriculture plays vital role in the socio-economic advancement of Nigeria. It is a sector that produces the food we consume as well as the raw materials for industries (Ojedapo & Ajao, 2018). Considering the above, agricultural education which is the process of preparing learners for acquisition of agricultural knowledge for occupation and employment in the agricultural sector should be qualitative. Since the place of agriculture is essential to sustainable livelihood and food security, practical agriculture is expected to be given priority in both rural and urban schools. Consequently, acquisition of practical knowledge in agriculture in schools will eventually encourage the learners to contribute

significantly to the development of the society in which they find themselves (Ojedapo & Ajao, 2018).

Qualitative agricultural education entails equipping learners of agriculture with sound pedagogical knowledge and skills needed in agricultural production. It prepares learners for effective and fruitful profession in the production of food for human consumption as well as raw materials for industries. Adoption of scientific approach in teaching-learning process of agricultural education helps greatly in the knowledge of soil management and moisture conservation. Teaching and learning of practical agriculture should be reflected in the school curriculum at all levels of education with full participation of the learners. In achieving food security in Nigeria, adequate attention must be given towards ensuring qualitative agricultural education in schools by making agriculture attractive to the youths.

Concept of Food Security

The basic necessity of life is food and it is required for both human and economic development. Food is defined as any substance that people eat and drink to maintain life and growth. It is a concept that has evolved over time. The problem of food scantiness was first observed during the civil war (1967-1970) when agriculture was neglected and food imports as well as other items were deliberately curtailed to conserve foreign exchange. This has made food security measures to be identified with macro-level instruments such as national and international storage of food and balance of payments support for countries facing temporary food shortages (Oke, 2015). Therefore, food security is a concept that is used to think systemically about how and why malnutrition arises, and what can be done to address and prevent it (United Nation, 2010).

According to Fraanje & Lee-Gammage (2018), they assert that food security is a way by which all the people at all times have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Food insecurity is often rooted in poverty and has long-term impacts on the ability of families, communities and countries to develop and prosper. Prolonged undernourishment stunts growth, slows cognitive development and increases susceptibility to illness. Food security was defined as the availability of adequate food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices (United Nations, 2010). Ensuring Food Security entails meeting two conditions. One condition is ensuring adequate food supplies, through domestic production or imports. The other is ensuring that households whose members suffer from under-nutrition have the ability to acquire food, either because they produce it themselves or because they have the income to acquire it. Food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain (National Academies of Sciences, Engineering, and Medicine, 2006). Food insecurity, as measured in the United States, refers to the social and economic problem of lack of food due to resource or other constraints, not voluntary fasting or dieting, or because of illness, or for other reasons. Food security is a constituent part of the broader concept of nutrition security. Nutritional security thus requires that household members should not only have access to food, but also to other requirements for a healthy life, such as health care, a hygienic environment and knowledge of personal hygiene (Oke, 2015). Food security is a necessary but insufficient condition for ensuring nutrition security.

Determinants of Food Security in the Society

Determinants of food security in the society are characterized with four components related to food availability, food accessibility, food utilization, and food stability (FAO, 1996). Food might be available but that does not determine food accessibility. Food access might be varied but does not guarantee food utilization as all three can be disrupted by lack of food stability caused by climate change, economic factors, political factors, social factors, physical factors, conflict, unemployment, disease or other factors. Food stability or the lack of it can affect any or all of the other three components of the food security. Food availability is the amount of food that is present in a country or area through all forms of domestic production, imports, food stocks and food aid (World food programme, 2009). Food availability has to do with having enough food available for the entire population at all time to sustain human life. Food availability addresses the “supply side” of food security and is determined by the level of food production, stock levels and net trade.

Food accessibility is still not commonly accepted as a fundamental part of food security despite Amartya Sen’s introduction of the concept in the early 1980s. World Food Programme (2009) opined that food access is a household’s ability to acquire adequate amount of food regularly through a combination of purchases, barter, borrowings, food assistance or gifts. It consists of three elements, which are physical, economic/financial and socio-cultural. The physical dimension can be illustrated by a situation where food is being produced in one part of a country but an inefficient or non-existent transport infrastructure means that food cannot be delivered to another part suffering from inadequate food. From the economic viewpoint, food security exists when people can afford to buy sufficient food. The idea that food insecurity arises when food is available but people are unable to afford it. In rural areas, most people, especially the poor, rely on market systems to provide food and essential goods and services but also for selling their produce (OXFAM, 2007). The socio-cultural dimension which arises when food may be physically available and the potential consumer has the money to buy the food but is prevented from doing so for being a member of a particular social group or even gender. Social conflict and civil strife can seriously disrupt food production and lead to the loss of livestock, for example with dire consequences for a household’s future food security (Riely, Church, Downer, Faux & Ulrich, 2002). Food usage is defined by the World Food Summit as safe and nutritious food that meets their nutritional demands. Food consumption also includes aspects like safe drinking water, proper sanitary facilities, and knowledge of food preparation and storage practices to prevent the spread of illness. For food security to exist, the World Food Summit states that availability, accessibility, and usage must be stable at all times (FAO, 1996).

Importance of Consistent Food Production to Humanity

Consistent food production is very fundamental to human survival, economic stability, and cultural preservation. In order to ensuring a reliable and sustainable food supplies, critical aspects like the following must be targeted:

- a. **Human Health and Nutrition:** A steady production of diverse and nutritious foods is essential to maintaining public health. However, the high cost of nutrient-rich foods, combined with variable incomes often makes healthy diets unaffordable for many. Addressing this issue requires public investments to improve productivity, and lower the costs of production, storage, and distribution of essential food items (Jessica, et al., 2021).

- b. **Economic Development:** Agriculture plays a pivotal role in global economies, providing employment, and supporting livelihoods, especially in rural areas. Increased incomes and economic growth can be achieved when agricultural productivity is enhanced.
- c. **Global Food Security:** Ensuring consistent food production is vital for global food security. Current crop production levels are sufficient to feed the projected global population of 9.7 billion by 2050 (Watson & Hewitt, 2018).
- d. **Environmental Sustainability:** The methods employed in food production have significant environmental impacts. Unsustainable practices contribute to climate change, water scarcity, and biodiversity loss (Poore & Nemecek, 2018).
- e. **Policy and Research Initiatives:** Addressing the challenges of consistent food production requires coordinated policy efforts and research initiatives.

Adverse Effects of Absence of Food to Humans

Absence of nutritious food, otherwise referred to as malnutrition, can lead to severe health problems, including weakened immunity, delayed recovery, increased risk of illness, organ's failure, as well as death. Nutrition refers to sum of all processes involved in how organisms obtain nutrients, metabolize them, and use them to support all life's processes. Development and growth of the body directly concerned with nutrition and diet taken by a person on daily basis. Use of balance diet helps one to stay healthy, and to perform the social activities in beneficial manner. Absence of balanced diet has adverse effect on overall structural and functional capacity of the body (Alamgir, Sami, Salahuddin, Syed, Naimatullah & Manzoor, 2018).

Concept of Qualitative Agricultural Education

Agricultural education teaches students about agriculture, food and natural resources. The fundamental objective in learning agriculture is for learners to develop basic principles of agricultural production relevant to a nation and the surrounding environment (KNEC, 2017). Practical teaching approaches result in development of the required skills for food security. It is primarily undertaken to prepare students for employment in the agricultural sector. According to Olusoga (2014), agricultural education is a sort of occupational training that focuses on providing learners with the knowledge and skills they need to be successful in agriculture. It requires learners to train both their heads and their hands. A learner exchange is armed with both educational and agricultural knowledge (i.e the development of the three domains; cognitive, affective and psychomotor). It is a form of job that emphasizes preparation and participation in a socially valuable work (Odogwu, 2005). Agricultural education is clearly different from general education in the sense that, it is skill oriented. Aside from teacher training, agricultural education educates individuals for self-sufficiency and employment creation.

Relationship between Agricultural Education and Food Security

The relationship between agricultural education and food security could be viewed in a position to develop skills among youths that promote avenues for food security through the application of relevant agricultural courses. UNFAO (2008) stated that the relevance of agricultural education has an implication of achieving the United Nations initiative which outlines the first Millennium Development Goal (MDG) of eradicating extreme poverty and hunger, the 2030 Agenda for Sustainable Development, the Africa's Agenda 2063 themed "the Africa We Want," on food security with the aspects of food security in mind to alleviate the problem of food insecurity.

Agricultural education focuses on the development of skills in food production, accessibility, food safety and nutrition, as well as production economics, in order to enhance the country's food security. These abilities in food safety, from manufacturing to preservation, preparation as well as to consumption, can help to avoid contamination, parasite diseases, and poisonous compounds that could harm human life (Mwiria, 2002). Such abilities protect against food safety risks such as pesticide residue on vegetables and foreign bodies in wastewater such as heavy metals and detergents. Also, this knowledge can significantly improve their agricultural productivity and guarantee food security for the family, if the developed skills are appropriately transferred into the real field. Skills acquisition in agricultural education also includes skills in the use of farm tools to till the soil and manipulate farm machines and equipment to carry out different farming activities.

Agricultural education helps the youths with the knowledge of environmental degradation which includes soil erosion devastates productive lands leading to low crop yield. Also, deforestation and increased demand of firewood for cooking have led to high denudation of soil cover resulting in reduced food supplies (Mwiria, 2002). Biotic factors such as incidence of diseases, pests, and parasites have contributed enormously to the decline in food production and its safety directly affecting food security. All these have negative effects on both the production, physical and economic access to food. The consequences of food insecurity are enormous; but agricultural education knowledge will broaden the youth's capacity in order to make them more effective, self-reliant, resourceful, and capable of solving farming problems which leads to food insecurity.

Factors Hindering Qualitative Agricultural Education

Olusoga (2014) stated that the various factors hindering qualitative agricultural education include the following among others:

- a. **Inadequate Facilities:** Equipment and tools are in short supply. If the crop and animal laboratories, the mechanical workshop, and the horticultural garden lack the necessary equipment and instruments, effective teaching and learning would be impossible, and students will be left behind. This will harm society and the economy, because you cannot offer what you don't have.
- b. **Shortage of Competent Teachers in Agricultural Education:** Insufficient competent teachers, instructors, and technicians has been identified as a factor hindering qualitative agricultural education. Adequate human and material resources must be made available to schools in order for any educational program to be implemented effectively. In particular, a sufficient number of trained instructors with various sorts of competence must be recruited and posted to schools, and academic personnel must be supplemented by non-teaching staff when necessary. For maximum efficacy, suitable training materials must also be made available to the trainers.
- c. **Teacher Preparation:** The effect of teacher preparation on teacher quality is a compelling claim for individuals involved in national education policy making. Teacher preparation and teacher quality is important to be addressed, if qualitative agricultural education is to be achieved.

- d. **Lack of Interest in Agricultural Education Programme:** Students' enthusiasm for agricultural education does not match the vast benefits that agriculture provides. People rarely learn successfully, unless they are interested in what they are studying. The success of every endeavor is inextricably linked to the level of interest in that endeavor. Students' interest in a certain field can be sparked by societal attitudes, training and lecture quality, peer group viewpoints, and the home element.
- e. **Disregard to Practicals on Curriculum:** Majority of agricultural education teachers usually concentrate on the teaching of the subject theoretically. They ignore the practical aspects, which are more pedagogically important to be achieved by the learners. In order to correct this anomaly, there should be proper supervision and monitoring by the concerned authority. Likewise, students should be taken to excursion where they will have opportunity to see some facilities that may not be available in the schools.

How to Promote Qualitative Agricultural Education

Qualitative agricultural education promotion happens each day in numerous ways, because productivity of farms is essential for many reasons. The following ways are essential in promoting qualitative agricultural education in Nigeria:

- a. **Agricultural Awareness:** Sensitization of qualitative agricultural awareness in the course of sharing of agricultural information through school assignments, articles in school, community, newspapers, blogs, facebook, twitter, instagram and other social media.
- b. **Being Available to Speak with the Public about Agriculture:** These conversations can range from a youth contacting local businesses to engaging with attendees at public events, to giving presentations at community meetings, at school or other youth programs. Business owners and community leaders are interested in knowing what youths learn through their participation in agriculture experiences and peers, and the public often have many questions and misconceptions about food production and day to day practices on a farm.
- c. **Developing Educational Exhibitions:** There could be educational exhibitions such as fairs, festivals and store promotions. Exhibitions can focus on all aspects of animal and crop production and should contain key messages. With today's technology, videos and pictures can be used to take the public on a virtual tour of a farm or through the phases of safe food production. The public is interested in learning about the production cycle, how farmers can take care of their animals, how they protect the environment and how they make sure the food they produce is safe and nutritious to eat. People are often surprised to learn about the by-products from animals as well as the many uses of crops. The more visual and/or interactive an exhibition can be, the better.
- d. **Interplant:** This is a practice in which different crops are growing together at the same time. It is the best way to maximize the productivity of your growing space. Some crops perform better when growing with some other crops on the field.
- e. **Improved Seeds:** Seeds play an essential role in the farms, and improved seeds are best to enhance farm productivity. Improved seeds are suitable for increasing production.

Practical-Oriental Agricultural Education

Practical-oriental in agriculture is basically the process of practical application in farming activities (crops and livestock), while agricultural education is the acquisition of needed skills and knowledge in agricultural science with the aim of imparting these knowledge and skills into prospective agricultural science students at all educational levels (primary, secondary and tertiary) to become self-reliant and agripreneurs, and contribute meaningfully to the government drive of attaining food security status as a nation (Diise, Zakaria, & Mohammed, 2018). Therefore, agricultural education is essential for the growth of developing nations, as it is the foundation of livelihoods, nutritional sustenance, and economic progress (Xu, Li, Qi, Tang & Mukwereza, 2016).

In Nigeria, agriculture remains the most important sector of the economy, providing food for her teeming population, provision of foreign exchange earnings, income for smallholder and commercial farmers and employment opportunities for its citizens. However, the Food and Agriculture Organization (1997) emphasized the failure of agricultural education in many developing nations to assist in adapting to the changing world through the acquisition of practical agricultural skills. It is one of the courses or subjects that can give students an edge in acquiring practical skills that can make them self-employed and self-reliant after leaving school, but it is quite disheartening that thousands of fresh graduates (post-secondary) are churned out from our higher institutions (colleges of education, monotronics, polytechnics and universities) of learning hoping to secure white collar jobs which is actually nonexistent, while larger percentage of them are unemployable because of lack of practical knowledge and skills required to excel in agriculture. These may also include students' loss of interest and carefree attitude to the subject (practical agriculture), inadequate innovative and relevant teaching techniques, inadequate funding and nonexistent teaching farms for practical agriculture.

Agricultural Mechanization as a Panacea to Food Insecurity

Mechanized agriculture is the process of deploying agricultural machinery to automate agricultural tasks, resulting in much higher productivity. Effective automation helps to enhance output in two ways: first, by ensuring that operations are completed on time, and second, by ensuring that the work is of high quality. Mechanization is an important component of agricultural crop production that has previously been overlooked in underdeveloped countries. Farm power shortages jeopardize the ability to cultivate adequate land and have long been identified as a driver of poverty, particularly in Sub-Saharan Africa.

Increased agricultural power means more chores can be accomplished on time, and larger areas can be cultivated to produce larger quantities of crops, while conserving natural resources. Sustainable agricultural mechanization has the ability to make postharvest processing and marketing operations more efficient, effective, and environmental friendly, which can help value chains and food systems thrive. However, there is a significant difference in how mechanization is used in wealthy and poor countries, given the challenges they face in all aspects of their economy, such as feeding a growing population, reducing poverty, protecting the environment, managing the effects of climate change, and combating malnutrition. Developing countries tend to design their own food security strategies, which may further contribute to a reduction in economic growth and political instability (Emami, Almassi, Bakhoda & kalantari, 2018).

Qualitative Agricultural Education as a Solution to Food Insecurity in Nigeria

According to Francis (2016), agricultural education is a vocational course that forms part of our educational system. It focuses mainly on manpower training and acquisition of skills in all aspects of agriculture. It is aimed at exposing, inculcating, and developing knowledge, competences, and practical skills. It provides the expected skills and knowledge needed by an individual to function effectively in any agricultural related job. Agricultural education could play a critical role in ensuring food security in Nigeria, if it is qualitative in nature. For instance, when youths put into practical use, the skills acquired in vocational agriculture, there would be abundance of food for the teeming population. The resultant increase in food production would be sustained, and the country can boast of self-reliance in agricultural production. In this situation, hunger and poverty would be ameliorated in the society, thereby leading to utmost peace and stability in the country.

Conclusion

It is commonly stated that food, clothing and shelter are very essential for the survival of human beings. Every member of a household consumes food on daily basis, which implies that every household is expected to be food secure. Therefore, food production from both crop and animal sources must be a continuous process to guiding against hunger and malnutrition. No doubt, food products are obtained from agriculture, and as such, it has to be effective. One of the ways to have effective agriculture is to ensure that agricultural education is qualitative.

Recommendations

In achieving food security in Nigeria, through qualitative agricultural education, the following recommendations are thereby made:

1. School-based farming should be encouraged and made mandatory in all primary and secondary schools nationwide.
2. Agricultural science should be made to be a compulsory subject in primary and secondary schools.
3. Periodic agricultural awareness and exhibitions should be organized in all parts of the country.
4. There should be access to farm machinery by individuals who are interested in farming.
5. Government at all levels should ensure that farm inputs are made available for farmers.
6. Farm equipment and tools should be made available in schools by the government.

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