THE ROLES OF LIBRARIES IN MODERN AGRICULTURAL PRACTICES OF FOOD

 SECURITY.

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 **Abstract**

*The importance of agriculture cannot be over emphasize as many countries are diversifying their economy through agriculture in order to improve their Gross Domestic Products (GDP) and adequately feed their nations. To achieve this modern trend, countries are adopting modern agricultural practices to achieve adequate food security. This article explains the modern agricultural practices to be the incorporation of technological advances, scientific research and innovative techniques to improve crop yields, optimize, resource use, and minimize environmental use. The article sees food security to be ensuring that people have consistent access to sufficient and safe nutritious food. It involves the availability, accessibility, utilization and stability of food to any nation. However, libraries can play the role of ensuring modern agricultural practices of food security by serving as knowledge hub for sustainable development, through the provision of information and services that strengthen the availability, accessibility, utilization and stability of food within communities through the promotion of education, digital* literacy and community engagement.

 **Key words: Agriculture, Food security, libraries, Food, Sustainable development goals**. **Introduction**

 Agricultural development is one of the most powerful tools to end extreme poverty, boost shared prosperity and feed a projected population. According to Muhammad et al (2020) developing countries are moving towards diversifying their economy through agriculture in order to feed their vast population and improve their GDPs.

Economy of many countries in the world are depending solely on agriculture. According to World Bank (2020) healthy, sustainable and inclusive food systems are critical to achieve the worlds development goals. With ensuring food security as one of the United Nations sustainable development goals (SDGs) the importance of modern agricultural practice cannot be overemphasized, this is because agriculture supports livelihood through food habitat, employment opportunities, and providing raw materials for food, products and building strong economy through traders.

The National planning commission (2005) is of the view that despite the dominant role of petroleum sector in the Nigerian economy the position of agriculture in ensuring food security is still recognized and cannot be overemphasized, because agriculture is the largest employer of labour and a key contributor to wealth creation and poverty alleviation.

According to Joel et al (2024) Libraries in Nigeria and around the world are engines of growth and development. They are increasingly recognized as having a broader role in the intellectual, social, economic, technological, and human resource development of a nation. This is why according to IFLA as reported by Nwakaego et al (2021) stated that the main objectives of libraries and information centers in achieving the third sustainable developments goals is to provide public access to efficient information on viable ways to ensure food productivity, access, utilization and stability and also collect, organize and disseminate, health and wellness information to help individuals and household to stay healthy. In addition, Nwakaego et al (2021) sees the provision of continuous access to right information to every state, community and household which enables them make right choices on ways of ensuring food security and making choices within their limited resources on the kind of food they purchase as the utmost responsibility of libraries and librarians.

 Modern agricultural practices can be conceived to be all cotemporary techniques and technologies that is used in agriculture in order to enhance productivity, sustainability and efficiency. Pannel (2009) identified the role of modern agricultural practices to be sustainability, productivity, adaptation to change, knowledge sharing, and economic viability. These practices integrate advancements in technology, science and management techniques to address challenges such as climate change, resource depletion and food security. Also according to Food and Agriculture Organization (FAO) (2021) the term modern agricultural practices is simply the practices that incorporate recent technological advances, scientific research and innovative techniques used to improve yields, optimize resource use, and minimize environmental impact. In the same vein, United State department of Agriculture USDA (2020) sees modern agricultural practice to be all techniques and technologies employed in agriculture that enhances productivity and sustainability. To USDA (2020) these practices includes the use of advanced machinery, biotechnology, integrated pest management and conservation practices to achieve higher efficiency and sustainability in farming.

 One of the aspect of modern agricultural practice is on ensuring adequate food security. It is a practice that helps to ensure the consistent access to sufficient, safe and nutritious food in order to have an active health. According FAO (2021) food security comes in four main dimensions which are availability, accessibility, utilization and stability of food.

 **Modern agricultural practices**

According to Food and Agriculture Organization (FAO) (2021) modern agricultural practices is the practices that incorporate recent technological advances, scientific research, and innovative techniques to improve crop yields, optimize resource use, and minimize environmental impact. These practices include precision agriculture, sustainable farming, and climate-smart agriculture. While USDA United States department of agriculture (2020) sees agricultural practice to be the techniques and technologies employed in agriculture that enhance productivity and sustainability. According to USDA (2020) the modern agricultural practice involves the use of:

1.Technological integration such as GPS, drones, and sensors.

2. Scientific research such as application of scientific findings to improve farming practices. 3.Resource optimization such as efficient use of water, soil and other resources.

4. Advanced machinery such as the use of modern equipment for planting, harvesting and processing.

5.Biotechnology such as genetic modification and other biotechnological advancements to improve crop resistance and yields.

 Integrated pest management such as the use of combined approach to managing pest in an environmentally economically and sustainable manner.

**Food security**

 Food security is a multifaceted concept essential for the well-being of individuals and societies. It involves ensuring that all people have consistent access to sufficient, safe, and nutritious food to lead active and healthy lives. According to FAO (2021) food security involves four main aspects or dimensions which are

 **Availability**: Availability refers to the physical presence of enough food at the global, national, or local levels. This dimension focuses on food production, storage, and distribution. According to the Food and Agriculture Organization (FAO) (2021) food availability is determined by the amount of food produced, imported, and stored, which must be sufficient to meet the needs of the population.

 **Accessibility**: Accessibility refers to the ability of individuals to obtain adequate food. This involves economic access (affordability) and physical access (proximity to food sources). To FAO accessibility is ensuring that individuals have the economic means and logistical ability to obtain sufficient food. Factors affecting accessibility include income levels, food prices, and the efficiency of food distribution systems (FAO, "Food Security: Concepts and Measurement," FAO, 2008).

**Utilization**: according to WHO (2021) Utilization focuses on the proper use of food to ensure good health. This includes the nutritional quality of food and the ability to absorb nutrients. The World Health Organization (WHO) emphasizes that food utilization involves not just consuming enough food but also ensuring that the food is safe, nutritious, and prepared in a manner that supports optimal health.

**Stability**: Stability refers to the consistency of food availability and access over time. It involves managing risks that could lead to food shortages or fluctuations. The FAO (2020) highlights that stability is crucial for maintaining food security, as it ensures that food availability and access are not disrupted by events like natural disasters, economic crises, or conflicts.

 **Importance of food security**

 Adequate food security is vital for preventing malnutrition and related health issues. Poor food security can lead to deficiencies and chronic diseases. According to WHO (2022) while explaining the report on global hunger index in developing countries notes that food insecurity can lead to various health problems, including undernutrition, stunting, and wasting in children, as well as anemia and other nutrient deficiencies in adults. Also food security can lead to economic stability, because a healthy, well-nourished population is more productive and contributes more effectively to the economy. Studies by the International Food Policy Research Institute (IFPRI) (2021) shows that food insecurity negatively impacts economic productivity and increases healthcare costs due to the prevalence of diet-related diseases. Also food security can lead to social stability. This is because food insecurity leads to social unrest, conflicts, and migration, as such food security helps maintain social stability. Research by the World Bank in (2020) indicates that food insecurity is a significant factor in social and political instability, influencing both domestic and international security.

**Strategies for achieving food security**

There are many strategies that are can be employed in order to achieve adequate food security. These includes

1. Agricultural Development: Enhancing agricultural productivity through support for farmers, improved practices, and technology is critical. The FAO (2021) emphasizes on the need to advocate for investing in agricultural technology and supporting smallholder farmers to boost productivity and resilience.
2. Economic measures: by ensuring income and price stability, people have adequate incomes to purchase food. The World Food Programme (WFP) (2022) emphasizes the importance of economic stability and the implementation of policies to manage food prices and ensure affordability (WFP, "Food Security Analysis," WFP, 2022).
3. Infrastructure improvement: Developing infrastructure to improve food distribution and reduce losses is vital for maintaining food security. Reports from the International Fund for Agricultural Development (IFAD) (2016) highlight the need for investments in rural infrastructure to enhance food access and reduce post-harvest losses.
4. Social protection programme: Implementing social safety nets like food assistance and cash transfers to support vulnerable populations helps ensure consistent food access. The WFP (2021) indicated that WFP and other organizations support social protection programs as a means to alleviate food insecurity and support those in need.
5. Disaster response: Developing systems to respond to emergencies and crises helps mitigate their impact on food security. The FAO (2022) and other agencies stress the importance of preparedness and response mechanisms to manage food security during emergencies.
6. Global efforts: Global organizations like the FAO, WFP, and IFPRI work on international initiatives to address food security through research, policy advocacy, and humanitarian aid. The United Nations' Sustainable Development Goals (SDGs) include Goal 2 (Zero Hunger), which aims to end hunger and achieve food security by 2030. Community program: Local governments and organizations implement programs tailored to regional needs, including agricultural support and community-based interventions. Local efforts often focus on context-specific solutions, as documented in various case studies and reports by local NGOs and development agencies.

**Roles of libraries in ensuring modern agricultural practice of ensuring food security.** Libraries play critical role in promoting food security through various means such as provision of information for raising awareness and facilitating community engagement. According to Panda et al (2023) Libraries play crucial role in modern agricultural practices and are integral to ensuring food security. To FAO (2021) food security involves four main aspects or dimensions which are availability, accessibility, utilization and stability of food. However, libraries can contribute to these four dimension of ensuring food security by FAO (2021) in the following ways:

1.**Availability of food**: libraries can support the availability of food by providing access to educational resources on sustainable agriculture, food production, and farming techniques. By hosting workshops and offering materials related to innovative farming practices, libraries can help individual local food production. According to Coombs (2010), libraries can provide agricultural manuals or host training session on techniques like vertical farming or organic gardening, which could increase the local availability of food in relation to ensuring food security. Also according to UNESCO (2019) some libraries have established community gardens and provided resources for gardening, thereby supporting local food initiatives and sustainability. These programs not only enhance food security but also encourage community participation and education on sustainable practices.

2. **Accessibility of food**: Libraries can play essential role in improving the accessibility of food by connecting communities with resources and services. According to Baines et al (2014) libraries can partner with local food banks, community kitchens, or advocacy groups to provide information on where and how to access food assistance. They could also offer digital literacy programs to help individual navigate online food assistance programs, government food and schemes and agricultural market prices. Also Ramsay et al (2022) is of the view that as part of ensuring accessibility to food, libraries provide access to agricultural software, data, and online resources that are critical for farm management, weather forecasting and market analysis all of which contributes in ensuring adequate food security.

3. **Utilization of food**: Libraries can contribute to proper utilization of food by providing information on nutrition, food safety and healthy cooking. According to IFLA (2020) Libraries are instrumental in helping communities utilize food security information effectively, by providing training workshops and outreach programs. Also libraries support individuals in applying knowledge about nutrition, sustainable agriculture and food safety. 4.**Stability of food**: Libraries contribute to ensuring the stability of food security by promoting long-term strategies for resilience and sustainability. According to Houghton (2013) libraries provides access to information on climate change, agricultural innovations, and community-based solutions as part of ensuring stability of food. According to FAO (2021) Libraries support research on food system resilience on issues like drought resistant crops, sustainable farming techniques, and global food trade policies all of which contributes to food security. Libraries can also support food stability by providing resources on disaster preparedness, sustainable agricultural practices, and climate change adaptation strategies. Coombs (2010) is of the view that by offering access to information on global and local food systems, libraries can help communities understand the factors that influence food security and foster log-term planning for food resilience.

 **Conclusion**

 Libraries can be key players in achieving food security by offering information and services that strengthen the availability, accessibility, utilization, and stability of food within communities by promoting education, digital literacy, and community engagement, libraries empower individuals and organizations thereby contributing to the global goal of achieving food security for all.

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