



## RESEARCH ARTICLE

### STRENGTHENING THE INTEGRATION OF NUTRITION AND AGRICULTURE IN NIGERIA FOR IMPROVED FOOD SECURITY AND PUBLIC HEALTH IMPACT

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#### ABSTRACT

**Background:** Nigeria faces significant challenges in achieving food security and improving public health outcomes, particularly among most vulnerable populations. **Objective:** This study examines the nexus between nutrition and agriculture in Nigeria, identifying opportunities for strengthening their integration to improve food security and public health outcomes. **Methods:** A mixed-methods approach was used to analyze the current state of nutrition and agriculture in Nigeria, identify linkages between the two sectors, and assess the impact of nutrition-sensitive agriculture. **Key Findings:** The study highlights the critical need for a multisectoral approach to addressing hunger, malnutrition, and diet-related diseases. Actionable recommendations include: 1. Developing a national nutrition-sensitive agricultural policy. 2. Establishing a multisectoral coordination mechanism. 3. Promoting climate-smart agricultural practices. **Conclusion:** This study underscores the importance of integrating nutrition and agriculture to achieve Sustainable Development Goals (SDGs) 1, 2, 3, 12, and 17. It reaffirms the role of the Committee on World Food Security and upholds the Rome Declaration on Nutrition and Framework for Action. **Recommendations:** There is an urgent need for collective action to: 1. Develop rural areas for sustainable agriculture and fisheries. 2. Support smallholder farmers, especially women farmers, herders, and fishers. 3. Prioritize resource allocation to least developed areas.

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## INTRODUCTION

Nigeria faces significant challenges in achieving food security and improving public health outcomes, particularly among vulnerable populations. Agriculture and nutrition are two critical components that are closely linked within the food system. Agriculture plays a crucial role in providing the necessary nutrients required to maintain a healthy diet, while nutrition helps to improve the overall health and well-being of the population (World Food Programme, 2020). However, despite the importance of these two components, there has been a prevailing issue of linkage of nutritional programmes with agriculture in Nigeria. This issue has resulted in several public health consequences in the country. According to the Food and Agricultural Organization (FAO), Nigeria is one of the top food-producing countries in Africa, due to its vast agricultural lands and favourable climate. However, despite this, the country suffers from a high burden of malnutrition, with over 37% of children under the age of five years stunted, and about 7 million children suffering from acute malnutrition (World Food Programme, 2020). This situation demonstrates the stark

contrast between the country's agricultural potential and the unfortunate reality of inadequate nutrition. The lack of integration between agriculture and nutrition programs has been identified as one of the primary reasons for this disparity. While Nigeria has several nutrition programs aimed at improving the nutritional status of the population, these programs often operate independently of agricultural interventions. As a result, there is limited coordination between the agriculture and nutrition sectors, leading to inefficiencies, duplication of efforts, and inadequate impact. The implications of failing to link nutrition programs with agriculture are far-reaching and have significant public health consequences. This paper seeks to examine the various consequences of this issue in Nigeria, as well as highlight potential solutions to address it.

### Background

Nutrition and agriculture play an essential role in public health as both are interconnected. Agriculture is the primary source of food for humans and provides the necessary nutrients required for survival and optimal health. On the other hand, proper nutrition helps prevent disease, maintain a healthy immune system, and promote growth and development (FAD, 1997a).

Consequently, agriculture and nutrition are critical components of the food system that must be integrated to ensure improved public health outcomes. Proper nutrition is essential for the growth and development of individuals, particularly children. Insufficient nutrient intake can lead to malnutrition and increase the risk of infections, stunted growth, and impaired cognitive development (FAO, WHO, & UNU, 2018). Agriculture provides the necessary nutrients required for a balanced diet, including carbohydrates, protein, fats, vitamins, and minerals. Foods such as fruits, vegetables, legumes, and grains are critical components of a healthy diet and provide essential nutrients. However, the lack of access to diverse, nutritious foods can lead to malnutrition and poor health outcomes.

proper dietary practices, has resulted in high rates of malnutrition among both children and adults (WHO 2021). However, malnutrition weakens the immune system and makes people more susceptible to infectious diseases thereby exacerbating Nigeria's public health challenges. In furtherance to the above, therefore, Food security is negatively impacted in Nigeria as a result of nutrition programs not being connected to agriculture (FAO, 2021). The majority of people rely primarily on agriculture to produce food and support themselves. However, there has been a noticeable drop in agricultural productivity as a result of the poor coordination between nutrition programs and farming methods (FAO, 2021). Consequently, there is now less food available, which has

**Table 1. Nutrients in different types of foods**

Food	Rich source of	Moderate source of
Cereals	Starch, fibre	Protein, B vitamins, many minerals
Starchy roots and fruits	Starch, fibre	Some minerals, vitamin C if fresh, vitamin A if yellow or orange
Beans and peas	Protein, starch, some minerals, fibre	B vitamins
Oilseeds	Fat, protein, fibre	B vitamins, some minerals
Fats and oils	Fat	Vitamin A if orange or red
Dark- to medium-green leaves	Vitamins A and C, folate	Protein, minerals
Orange vegetables	Vitamins A and C	Fibre
Orange fruits	Vitamins A and C	Fibre
Citrus fruits	Vitamin C	Fibre
Milk	Fat, protein, calcium, vitamins	
Eggs	Protein, vitamins	Fat, minerals (not iron)
Meat	Protein, iron	
Fish	Protein, iron	
Liver	Protein, iron, vitamins	

Source: King and Burgess, 1993.

**Table 2. Simple classification of dietary constituents**

Constituent	Use
Water	To provide body fluid and to help regulate body temperature
Carbohydrates	As fuel for energy for body heat and work
Fats	As fuel for energy and essential fatty acids
Proteins	For growth and repair
Minerals	For developing body tissues and for metabolic processes and protection
Vitamins	For metabolic processes and protection
Indigestible and unabsorbable particles including fibre	To form a vehicle for other nutrients, add bulk to the diet, provide a habitat for bacterial flora and assist proper elimination of refuse

Source: FAO, 1997a.

Conversely, poor agricultural practices can also affect nutrition outcomes. The overuse of chemical fertilizers and pesticides can reduce the nutrient quality of foods (FAO, WHO, & UNU, 2018). Similarly, climate change and related weather events can affect agricultural production and, in turn, lead to food insecurity and malnutrition. The integration of nutrition programmes and agriculture is crucial for achieving optimal health outcomes. This ensures diverse, nutritious food production, improved access to healthy foods, and healthy eating habits. Recognizing agriculture's role in food systems and food security is essential. This integration can address malnutrition and improve public health in Nigeria.

**Statement of the Problem:** Nigeria faces challenges in integrating nutrition and agriculture, despite their critical roles in public health, causing severe consequences for the population's health. One of the key consequences is the high prevalence of malnutrition in the country. According to the 2018 Nigeria Nutrition and Health Survey, 37% of children under five in Nigeria are stunted, while 23% suffer from wasting (UNICEF, 2018; WHO, 2020). Inadequate access to nutritious foods, combined with a lack of knowledge about

raised prices and created a shortage. Because of this, it can be challenging for most vulnerable populations and groups, especially those who are poor, to obtain a sufficient and nourishing diets. According to the Food and Agriculture Organization, Nigeria is currently facing a food security crisis, with an estimated 23% of the population experiencing severe food insecurity (FAO, 2021). It is evident that the failure to link nutrition programmes with agriculture exacerbates food insecurity, perpetuating a cycle of malnutrition and adverse poor health outcomes and poor immunity levels to resist common ailments... In other words, the Nigerian population's well-being is dependent and significantly impacted by malnutrition and food crisis which are one of the leading causes of increased stress, decreased productivity, and cognitive function (FAO, 2021). This lack of a comprehensive approach to nutrition hinders economic growth and development, preventing a thriving workforce and sustainable development (FAO, 2021).

**The major nutrients and their functions:** Eating is a natural and essential activity. When there are constraints in the food system and access to food is restricted on economic, social or

cultural grounds, basic nutritional needs for energy and essential nutrients may not be satisfied.

To understand human nutrition, it is necessary to know the nutrient requirements and to understand the function of food and nutrients in promoting and maintaining growth, health, immunity, activity and reproduction. An understanding of nutrient functions is particularly relevant in the prevention and control of nutrient deficiency diseases and protein-energy malnutrition (PEM) (Table 2). Most animal species require a number of essential dietary factors which can be classified under chemical groupings such as carbohydrates, proteins, fats, vitamins and minerals. Dietary fibre and water are sometimes added to this list. A simple classification of dietary constituents is given in Table 2. Vitamins and minerals may also be described as micronutrients. A healthy diet supplies adequate but not excessive quantities of all these nutrients. Personal requirements vary depending on individual body size, age, sex, physiological status and lifestyle. Another significant challenge is the lack of diversification in agricultural production. Nigeria's agricultural production is heavily focused on the production of staple crops such as rice, cassava, and maize (FAO, 2019). This approach limits the availability of diverse nutrient-dense foods such as fruits and vegetables. As a result, the population's access to healthy foods and the necessary nutrients required for optimal health is limited. Inadequate coordination between nutrition and agriculture programs prevents the promotion of diverse and nutrient-rich crops, resulting in a deficiency of essential vitamins and minerals in diets. This deficiency contributes to stunting, wasting, and other forms of malnutrition, jeopardizing individuals' physical and cognitive development (FAO, 2019).

The survey highlights the disconnection between these two sectors leading to inadequate food supply, high rates of malnutrition, and compromised physical and cognitive development and invariably, drastically affecting public health outcomes as well as immunity of individuals to resist minor illnesses. This essay aims to explore the implications of this failure on various aspects of public health, including food security, malnutrition, and overall well-being. By analyzing the existing literature and research, we can gain a deeper understanding of the challenges faced by the Nigerian population due to this disconnect. This essay highlights the urgent need for integrated efforts of policymakers, researchers, and stakeholders to prioritize the integration of nutrition programs and agriculture to address the pressing public health issues faced by the nation. This will be achieved by establishing effective coordination and implementing evidence-based strategies, Nigeria can work towards improving food security, reducing malnutrition rates, and promoting the overall well-being of its population.

**Overall Objective of this study:** To strengthen the integration of nutrition and agriculture in Nigeria for improved food security and public health outcomes.

#### Specific Objectives

- Analyze the current state of nutrition and agriculture in Nigeria.
- Identify the linkages between nutrition and agriculture in Nigeria.

- Assess the impact of nutrition-sensitive agriculture on food security and public health outcomes in Nigeria.
- Provide recommendations for strengthening the integration of nutrition and agriculture in Nigeria.

#### Significance

- Improved food security: Strengthening the integration of nutrition and agriculture can lead to increased access to nutritious food, reducing hunger and malnutrition.
- Better public health outcomes: Nutrition-sensitive agriculture can help reduce the burden of diet-related diseases, such as obesity, diabetes, and heart disease.
- Enhanced economic growth: A well-integrated nutrition and agriculture sector can contribute to economic growth, job creation, and poverty reduction.
- Increased resilience to climate change: Nutrition-sensitive agriculture can help build resilience to climate change by promoting climate-smart agricultural practices.

#### THE CURRENT STATE OF AGRICULTURE AND NUTRITION IN NIGERIA

**Overview of the agriculture sector in Nigeria:** Nigeria is a country with a population of over 200 million people, and it is the most populous country in Africa. The country is blessed with vast agricultural resources, including fertile land, water resources, and a favourable climate. Agriculture is a significant contributor to the Nigerian economy, accounting for about 22% of the country's Gross Domestic Product (GDP) and employing about 70% of the population (FAO, 2020). Despite this, Nigeria still faces significant challenges in the agriculture sector, which has led to a failure to link nutrition programmes with agriculture, resulting in public health consequences. One of the significant challenges facing agriculture in Nigeria is low productivity. The country's agricultural productivity is low due to several factors, including poor infrastructure, inadequate access to credit facilities, and limited access to modern farming technologies (FAO, 2020). This has resulted in low yields, which have affected the availability and affordability of food in the country. As a result, many Nigerians are malnourished, with about 37% of children under the age of five suffering from stunted growth (UNICEF, 2020). Another challenge facing agriculture in Nigeria is climate change. The country is experiencing the adverse effects of climate change, including droughts, floods, and desertification, which have affected agricultural production. The changing climate has also led to the loss of biodiversity, which has affected the availability of nutritious foods (FAO, 2020). This has resulted in a lack of diversity in diets, which has contributed to malnutrition in the country.

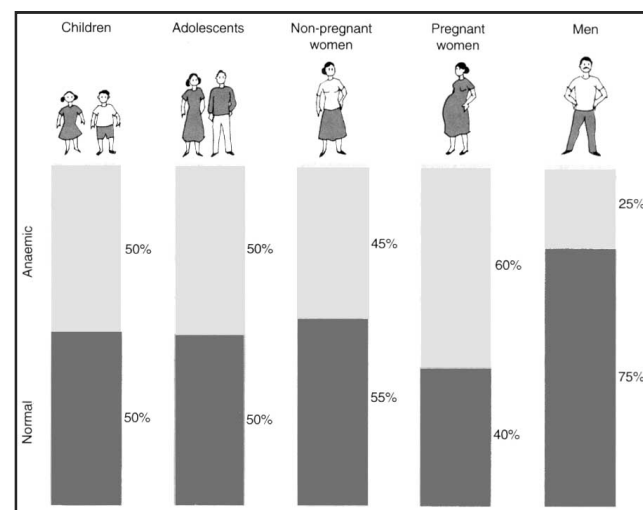
Furthermore, the lack of coordination between nutrition programs and agriculture has also contributed to public health consequences in Nigeria. Nutrition programs in the country have focused mainly on providing food supplements to malnourished individuals, without addressing the root causes of malnutrition. This has resulted in a lack of sustainability in nutrition programs, as malnourished individuals are likely to relapse once the food supplements are discontinued (FAO, 2020). The agriculture sector in Nigeria is dominated by smallholder farmers who cultivate crops such as cassava, yam, maize, rice, and sorghum. These crops are mainly grown for subsistence purposes, with only a small percentage being sold in local markets (FAO, 2020). The livestock sector is also an

essential component of agriculture in Nigeria, with cattle, sheep, and goats being the most commonly reared animals. Despite the significant contribution of agriculture to the Nigerian economy, the sector faces several challenges. One of the significant challenges is low productivity. The low productivity is due to several factors, including poor infrastructure, inadequate access to credit facilities, and limited access to modern farming technologies (FAO, 2020). This has resulted in low yields, which have affected the availability and affordability of food in the country. Agriculture is a significant contributor to the Nigerian economy, employing about 70% of the population (FAO, 2020). However, the sector faces several challenges, including low productivity and the adverse effects of climate change. The lack of coordination between nutrition programs and agriculture has also contributed to public health consequences in Nigeria. To address these challenges, there is a need for increased investment in agriculture, including the provision of modern farming technologies, improved infrastructure, and access to credit facilities. Additionally, there is a need for better coordination between nutrition programs and agriculture to ensure the sustainability of nutrition interventions.

**Key Nutrition Challenges in Nigeria:** Nigeria is a country that faces significant nutrition challenges, with a high prevalence of malnutrition and food insecurity. One of the key challenges is the failure to link nutrition programs with agriculture, which has significant public health consequences. This failure has led to a situation where many Nigerians do not have access to the nutritious foods they need to maintain good health. Malnutrition is a significant problem in Nigeria, with high rates of both under nutrition and over nutrition. According to the World Health Organization (WHO), 37% of children under the age of five in Nigeria are stunted, meaning they have a low height for their age due to chronic malnutrition (WHO, 2021). Additionally, 7.2% of children under five are wasted, meaning they have a low weight for their height due to acute malnutrition (WHO, 2021). At the same time, Nigeria also has a high prevalence of overweight and obesity, with 26.8% of adults classified as overweight and 6.5% classified as obese (WHO, 2021).

Food insecurity is another significant challenge in Nigeria, with many people lacking access to sufficient quantities of nutritious food. According to the Food and Agriculture Organization (FAO), 22.5% of the population in Nigeria is undernourished, meaning they do not have access to enough food to meet their basic energy needs (FAO, 2021). This is due in part to a lack of investment in agriculture, which has led to low agricultural productivity and limited access to nutritious foods. The failure to link nutrition programs with agriculture has contributed to these challenges. Many nutrition programs in Nigeria focus on providing supplements and other interventions to address malnutrition, but do not address the underlying causes of malnutrition, such as a lack of access to nutritious foods. By failing to invest in agriculture and promote the production and consumption of nutritious foods, these programs are unlikely to have a significant impact on malnutrition rates in the long term.

**Assessment of the prevalence and causes of anaemia:** The assessment of the prevalence of anaemia in a community is often based on surveys of women and children, as these are the groups most at risk. The prevalence of anaemia in pregnant women, assessed on a global basis.



**Figure 1. Proportion of people in developing countries who are anaemic**

It is estimated that 60 percent of pregnant women and 45 percent of non-pregnant women in developing countries are anaemic. The symptoms of anaemia vary significantly and can be caused by conditions other than iron deficiency. The most practical form of assessment is therefore based on the determination of the blood haemoglobin level. Table 4 shows the haemoglobin levels generally accepted to indicate anaemia in different members of the family. Haemoglobin levels rarely exceed 16 g per 100 ml. Blood tests are normally taken at health clinics and are carried out routinely for pregnant women. Children may be tested at school during special surveys or as an initial action before the definition of a treatment and control programme for a number of nutritional disorders.

**Table 4: Haemoglobin levels in anaemia**

Group	Haemoglobin level <sup>a</sup> (g/100 ml)
Children 6 months to 5 years	11
Children 6 - 14 years	12
Men	13
Women (not pregnant)	12
Women (pregnant)	11

Source: UN ACC/SCN, 1991.

Nigeria faces significant nutrition challenges, including high rates of malnutrition and food insecurity. The failure to link nutrition programs with agriculture has contributed to these challenges, and addressing this issue will be critical to improving public health outcomes in the country.

**Existing Nutrition Programmes and Policies in Nigeria:** Nigeria is a country with a high burden of malnutrition, with an estimated 37% of children under five years of age stunted, 7% wasted, and 23% underweight (National Bureau of Statistics, 2019). Despite the existence of several nutrition programs and policies, the country still faces significant challenges in addressing malnutrition. One of the major challenges is the failure to link nutrition programs with agriculture, which has significant public health consequences. For example, the government's school feeding program, which aimed to provide free meals to school children, but did not prioritize the inclusion of nutrient-rich foods. As a result, this program did not significantly contribute to the improvement of the nutritional status of children.

The National Policy on Food and Nutrition (NPFN) is the overarching policy framework for addressing malnutrition in Nigeria. The policy aims to improve the nutritional status of Nigerians through a multi-sectorial approach that involves the health, agriculture, education, and other relevant sectors (Federal Ministry of Health, 2016). The policy recognizes the importance of agriculture in addressing malnutrition and emphasizes the need to promote food security and nutrition-sensitive agriculture. The National Strategic Plan of Action for Nutrition (NSPAN) is another key policy document that guides nutrition programming in Nigeria. The plan aims to reduce malnutrition by 20% by 2020 and 50% by 2025 (Federal Ministry of Health, 2014). The plan identifies agriculture as a key sector for addressing malnutrition and emphasizes the need to promote nutrition-sensitive agriculture. The National Plan of Action for Food and Nutrition (NPAN) is a sectoral plan that focuses on agriculture and food security. The plan aims to increase food production and improve access to nutritious foods, particularly for vulnerable populations (Federal Ministry of Agriculture and Rural Development, 2016). The plan recognizes the importance of nutrition-sensitive agriculture and emphasizes the need to promote the production and consumption of nutrient-rich foods. Nigeria has several nutrition programs and policies that recognize the importance of agriculture in addressing malnutrition. However, the failure to link nutrition programs with agriculture has significant public health consequences. There is a need for greater coordination between the health and agriculture sectors to promote nutrition-sensitive agriculture and improve the nutritional status of Nigerians.

**THE VALUES OF LINKAGE OF NUTRITION PROGRAMMES WITH AGRICULTURE:** Malnutrition is a significant public health problem in Nigeria, with high rates of stunting, wasting, and underweight among children under five years of age (WHO, 2021; UNICEF, 2018). One of the major challenges in addressing malnutrition is the failure to link nutrition programs with agriculture. Nutrition-sensitive agriculture is an approach that recognizes the critical role of agriculture in improving nutrition outcomes. This approach involves promoting the production and consumption of nutrient-rich foods, as well as improving access to these foods for vulnerable populations (WHO, 2021). Linking nutrition programs with agriculture has several benefits. First, it can improve the availability and accessibility of nutrient-rich foods. Agriculture is the primary source of food, and promoting the production of nutrient-rich foods can increase the availability of these foods in local markets. This can improve access to these foods for vulnerable populations, particularly in rural areas where access to markets is limited. Second, linking nutrition programs with agriculture can improve the nutritional quality of diets. Nutrition-sensitive agriculture involves promoting the production and consumption of a diverse range of nutrient-rich foods, including fruits, vegetables, legumes, and animal-source foods. This can improve the nutritional quality of diets and reduce the risk of micronutrient deficiencies. Third, nutrition-sensitive agriculture can contribute to economic development and poverty reduction. Agriculture is a key sector of the Nigerian economy, and promoting the production of nutrient-rich foods can create employment opportunities and increase income for farmers. This can contribute to poverty reduction and improve food security. Finally, linking nutrition programs with agriculture can improve the effectiveness of nutrition interventions. Nutrition programmes that are linked with agriculture can

leverage existing agricultural programs and infrastructure to promote the production and consumption of nutrient-rich foods. This can improve the sustainability and scalability of nutrition interventions and increase their impact on nutrition outcomes.

**Connection Between Agriculture and Nutrition:** Agriculture and nutrition are closely linked, and the failure to linkup nutrition programmes with agriculture can have significant public health consequences. Agriculture is the primary source of food for most people in Nigeria, and the quality and quantity of food produced can have a significant impact on the nutritional status of the population. The link between agriculture and nutrition is complex and multifaceted, and it involves various factors such as food availability, accessibility, affordability, and utilization (FAO, 2013). Food availability refers to the quantity and quality of food produced, while accessibility refers to the ability of individuals to obtain food (FAO, 2020). Affordability refers to the cost of food, and utilization refers to the ability of individuals to use food effectively to meet their nutritional needs (FAO, 2020). Agriculture plays a critical role in all these factors, and failure to link nutrition programs with agriculture can lead to food insecurity, malnutrition, and other public health consequences. In Nigeria, agriculture is the largest sector of the economy, employing over 70% of the population and contributing significantly to the country's GDP (FAO, 2020). However, despite the significant contribution of agriculture to the economy, the country still faces significant challenges in terms of food security and nutrition. According to the World Food Programme (WFP), Nigeria has one of the highest rates of malnutrition in the world, with over 2 million children suffering from severe acute malnutrition (WFP, 2021).

One of the main reasons for this high rate of malnutrition is the failure to link nutrition programs with agriculture. Many nutrition programs in Nigeria focus on providing food supplements and other interventions to address malnutrition, but they do not address the underlying causes of malnutrition, such as food insecurity and poor dietary diversity. By linking nutrition programs with agriculture, it is possible to address these underlying causes and improve the nutritional status of the population. For example, promoting the production and consumption of nutrient-rich crops such as fruits and vegetables can help to improve dietary diversity and reduce the risk of malnutrition. Similarly, promoting the production and consumption of animal-source foods such as meat, milk, and eggs can help to address protein and micronutrient deficiencies. By linking nutrition programs with agriculture, it is possible to promote sustainable agriculture practices that improve food availability, accessibility, affordability, and utilization, and ultimately improve the nutritional status of the population. Agriculture and nutrition are closely linked, and failure to link nutrition programs with agriculture can have significant public health consequences. By promoting sustainable agriculture practices that improve food availability, accessibility, affordability, and utilization, it is possible to address the underlying causes of malnutrition and improve the nutritional status of the population.

**Benefits of Integrating Nutrition and Agriculture:** Integrating nutrition and agriculture has numerous benefits, including improving food security, reducing malnutrition, and promoting sustainable agriculture practices (FAO, 2013). By integrating nutrition and agriculture, it is possible to address the underlying causes of malnutrition and improve the nutritional

status of the population. One of the main benefits of integrating nutrition and agriculture is improving food security. Agriculture is the primary source of food for most people in Nigeria, and by promoting sustainable agriculture practices, it is possible to increase food production and improve food availability. This, in turn, can help to reduce food insecurity and improve the nutritional status of the population. For example, promoting the production and consumption of nutrient-rich crops such as fruits and vegetables can help to improve dietary diversity and reduce the risk of malnutrition. Another benefit of integrating nutrition and agriculture is reducing malnutrition. Malnutrition is a significant public health problem in Nigeria, with high rates of stunting, wasting, and underweight among children under five years of age (FAO, 2013). By promoting the production and consumption of nutrient-rich foods, such as animal-source foods and fruits and vegetables, it is possible to address protein and micronutrient deficiencies and reduce the risk of malnutrition. This can have significant long-term benefits, including improving cognitive development and reducing the risk of chronic diseases.

Integrating nutrition and agriculture also promotes sustainable agriculture practices. Sustainable agriculture practices promote the efficient use of natural resources, reduce the use of harmful chemicals, and promote biodiversity. By promoting sustainable agriculture practices, it is possible to improve the long-term productivity of agricultural systems and reduce the environmental impact of agriculture. This, in turn, can help to improve food security and reduce the risk of malnutrition. Integrating nutrition and agriculture has numerous benefits, including improving food security, reducing malnutrition, and promoting sustainable agriculture practices. Failure to link nutrition programs with agriculture in Nigeria has led to significant public health consequences, including high rates of malnutrition. By promoting sustainable agriculture practices and the production and consumption of nutrient-rich foods, it is possible to address the underlying causes of malnutrition and improve the nutritional status of the population.

**International and National Efforts to Promote Integration of Nutrition Programs with Agriculture:** The integration of nutrition programs with agriculture has gained significant attention from international and national organizations in recent years. This is due to the recognition of the critical role that agriculture plays in improving food security and nutrition. In Nigeria, failure to link nutrition programs with agriculture has led to significant public health consequences, including high rates of malnutrition. However, international and national efforts are being made to promote the integration of nutrition programs with agriculture to address these challenges. At the international level, the Food and Agriculture Organization of the United Nations (FAO) has been at the forefront of promoting the integration of nutrition programs with agriculture. The FAO has developed various guidelines and tools to support the design and implementation of nutrition-sensitive agriculture programs. For example, the FAO has developed the Nutrition-Sensitive Agriculture Design Guide, which provides practical guidance on how to design and implement nutrition-sensitive agriculture programs (FAO, 2017). The FAO has also developed the Food Insecurity and Vulnerability Information and Mapping System (FIVIMS), which provides information on food insecurity and vulnerability to support the design and implementation of food security and nutrition programs (FAO, 2020).

At the national level, the Nigerian government has also made efforts to promote the integration of nutrition programs with agriculture. The government has developed various policies and programs aimed at improving food security and nutrition. For example, the National Policy on Food and Nutrition Security was developed in 2016 to provide a framework for addressing food and nutrition security challenges in the country (Federal Ministry of Health, 2016). The government has also developed the National Strategic Plan of Action for Nutrition, which provides a roadmap for addressing malnutrition in the country (Federal Ministry of Health, 2014). In addition, various non-governmental organizations (NGOs) and civil society organizations (CSOs) are also promoting the integration of nutrition programs with agriculture in Nigeria. For example, the Partnership for Child Development (PCD) is working with the Nigerian government to implement the Home Grown School Feeding Program, which aims to improve the nutritional status of school-aged children by providing them with nutritious meals sourced from local farmers (PCD, 2021). Similarly, the International Food Policy Research Institute (IFPRI) is working with the Nigerian government to develop and implement nutrition-sensitive agriculture programs (IFPRI, 2021). International and national efforts are being made to promote the integration of nutrition programs with agriculture in Nigeria. The FAO has developed various guidelines and tools to support the design and implementation of nutrition-sensitive agriculture programs, while the Nigerian government has developed various policies and programs aimed at improving food security and nutrition. NGOs and CSOs are also playing a critical role in promoting the integration of nutrition programs with agriculture. These efforts are critical in addressing the public health consequences of failing to link nutrition programs with agriculture in Nigeria.

**CONSEQUENCES OF FAILING TO LINK NUTRITION PROGRAMS WITH AGRICULTURE:** In Nigeria, the failure to link nutrition programs with agriculture has resulted in significant public health consequences. Despite being a country with abundant agricultural resources, Nigeria has one of the highest rates of malnutrition in the world, with over 37% of children under the age of five suffering from stunted growth (FAO, 2020). This is largely due to the lack of access to nutritious food, particularly in rural areas where poverty and food insecurity are prevalent. One of the main consequences of failing to link nutrition programs with agriculture is the limited availability of diverse and nutritious food. The majority of smallholder farmers in Nigeria grow staple crops such as cassava, yam, and maize, which are high in carbohydrates but low in essential nutrients such as vitamins and minerals (FAO, 2020). This results in a diet that is deficient in essential nutrients, leading to malnutrition and other health problems. Another consequence is the limited access to markets for smallholder farmers. Without access to markets, farmers are unable to sell their produce and generate income, which limits their ability to invest in their farms and improve their production. This perpetuates the cycle of poverty and food insecurity, making it difficult for farmers to produce and sell nutritious food. Furthermore, the lack of coordination between nutrition programs and agriculture has resulted in a fragmented approach to addressing malnutrition. Nutrition programs often focus on providing supplements and fortified foods, rather than addressing the root causes of malnutrition, such as the lack of access to diverse and nutritious food. This approach is not sustainable and does not address the underlying issues that contribute to malnutrition.

To address these consequences, there is a need for a coordinated approach that links nutrition programs with agriculture. This includes promoting the production and consumption of diverse and nutritious food, improving access to markets for smallholder farmers, and investing in agricultural research and development to improve the productivity and profitability of smallholder farms (FAO, 2020).

**Food Insecurity and Its Impact on Public Health:** Food insecurity is a significant public health issue in Nigeria, with over 80 million people estimated to be food insecure (FAO, 2020). Food insecurity is defined as the lack of access to sufficient, safe, and nutritious food to meet dietary needs for an active and healthy life (FAO, 2020). The failure to link nutrition programs with agriculture has contributed to the high rates of food insecurity in Nigeria, which has significant public health consequences. To address this issue, there is a need for a coordinated approach that addresses the root causes of food insecurity and promotes the production and consumption of diverse and nutritious food. One of the main impacts of food insecurity on public health is malnutrition. Malnutrition is a condition that results from a lack of essential nutrients in the diet, which can lead to stunted growth, weakened immune systems, and other health problems (FAO, 2020). In Nigeria, malnutrition is a significant public health issue, with over 37% of children under the age of five suffering from stunted growth (FAO, 2020). This is largely due to the lack of access to diverse and nutritious food, particularly in rural areas where poverty and food insecurity are prevalent. Food insecurity also has a significant impact on maternal and child health. Pregnant women who are food insecure are more likely to experience complications during pregnancy and childbirth, and their children are more likely to be born with low birth weight and experience developmental delays (FAO, 2020). Children who experience food insecurity are also more likely to suffer from chronic illnesses and have lower academic achievement (FAO, 2020).

Furthermore, food insecurity can lead to mental health problems such as anxiety and depression. The stress of not having enough food can lead to feelings of hopelessness and despair, which can have long-term impacts on mental health (FAO, 2020). To address the impact of food insecurity on public health, there is a need for a coordinated approach that links nutrition programs with agriculture. This includes promoting the production and consumption of diverse and nutritious food, improving access to markets for smallholder farmers, and investing in agricultural research and development to improve the productivity and profitability of smallholder farms (FAO, 2020).

**High Rates of Malnutrition, Increased Prevalence of Diet-Related Diseases in Nigeria:** Nigeria is facing a significant public health challenge due to the high rates of malnutrition and the increased prevalence of diet-related diseases. Despite being a country with abundant agricultural resources, Nigeria has one of the highest rates of malnutrition in the world, with over 37% of children under the age of five suffering from stunted growth (FAO, 2020). This is largely due to the failure to link nutrition programs with agriculture, which has resulted in limited access to diverse and nutritious food. One of the consequences of the failure to link nutrition programs with agriculture is the increased prevalence of diet-related diseases. Stunting, wasting, and micronutrient deficiencies are common

diet-related diseases in Nigeria, particularly among children (FAO, 2020). Stunting is a condition that results from a lack of essential nutrients in the diet, which can lead to impaired growth and development. Wasting is a condition that results from a lack of food, which can lead to severe weight loss and malnutrition. Micronutrient deficiencies, such as iron deficiency anaemia and vitamin A deficiency, can lead to a range of health problems, including impaired immune function and vision loss (FAO, 2020). The high rates of malnutrition and the increased prevalence of diet-related diseases have significant public health consequences in Nigeria. Malnutrition can lead to a range of health problems, including weakened immune systems, impaired cognitive development, and increased risk of infectious diseases (FAO, 2020). Diet-related diseases can also have long-term impacts on health, including increased risk of chronic diseases such as diabetes and cardiovascular disease (FAO, 2020). To address the high rates of malnutrition and the increased prevalence of diet-related diseases in Nigeria, there is a need for a coordinated approach that links nutrition programs with agriculture. This includes promoting the production and consumption of diverse and nutritious food, improving access to markets for smallholder farmers, and investing in agricultural research and development to improve the productivity and profitability of smallholder farms (FAO, 2020). The failure to link nutrition programs with agriculture has resulted in high rates of malnutrition and increased prevalence of diet-related diseases in Nigeria. To address this issue, there is a need for a coordinated approach that addresses the root causes of malnutrition and promotes the production and consumption of diverse and nutritious food.

#### **Economic and Social Implications of the Disconnect between Nutrition Programs and Agriculture in Nigeria:**

Nigeria is a country with a high burden of malnutrition, with an estimated 37% of children under five years of age suffering from stunted growth due to chronic malnutrition (UNICEF, 2020). Despite the existence of various nutrition programs aimed at addressing this issue, there is a disconnect between these programs and the agricultural sector, which is a major source of food production in the country. This disconnect has significant economic and social implications for Nigeria. One of the economic implications of the disconnect between nutrition programs and agriculture is the loss of potential income for farmers. The lack of coordination between these two sectors means that farmers may not be producing the types of crops that are needed to address malnutrition. For example, there may be a focus on cash crops such as cocoa and palm oil, rather than nutrient-rich crops such as fruits and vegetables. This can result in a missed opportunity for farmers to earn income from producing crops that are in high demand for nutrition programmes. Another economic implication is the cost of importing food to address malnutrition. When there is a lack of coordination between nutrition programs and agriculture, it may be necessary to import food to meet the nutritional needs of the population. This can be costly for the government and can result in a drain on foreign exchange reserves. In addition, importing food can have negative implications for local farmers, who may be unable to compete with cheaper imported products. The social implications of the disconnect between nutrition programs and agriculture are also significant. Malnutrition can have long-term effects on the health and well-being of individuals, particularly children. This can result in increased healthcare costs and lost productivity due to illness. In addition, malnutrition can have negative effects on education outcomes, as children who are

malnourished may have difficulty concentrating and learning in school. Furthermore, the lack of coordination between nutrition programmes and agriculture can exacerbate existing inequalities in society. For example, women and girls may be disproportionately affected by malnutrition due to cultural and social norms that limit their access to food and healthcare. Without targeted interventions that address these inequalities, the disconnect between nutrition programs and agriculture may perpetuate these disparities. The disconnect between nutrition programmes and agriculture in Nigeria has significant economic and social implications. Addressing this issue will require greater coordination between these two sectors, as well as targeted interventions that address the root causes of malnutrition and inequalities in society.

#### **CASE STUDIES AND EXAMPLES OF THE DISCONNECT BETWEEN NUTRITION PROGRAMMES AND AGRICULTURE IN NIGERIA:**

The disconnect between nutrition programs and agriculture is particularly evident in rural areas of Nigeria, where the majority of the population relies on agriculture for their livelihoods. For example, in the northern region of Nigeria, which is predominantly rural, there is a high prevalence of malnutrition due to a lack of access to nutrient-rich foods (UNICEF, 2020). Despite the existence of nutrition programs in these areas, there is often a lack of coordination with local farmers, resulting in a limited availability of nutrient-rich crops. Another example is the lack of integration between nutrition programmes and the livestock sector. Livestock, such as cows and goats, can provide a source of protein and other essential nutrients. However, there is often a lack of coordination between nutrition programmes and livestock farmers, resulting in a limited availability of animal-source foods in many parts of Nigeria. There are several successful examples of nutrition-agriculture integration in other countries that can serve as models for Nigeria. One such example is the Scaling Up Nutrition (SUN) Movement, which is a global initiative aimed at reducing malnutrition through a multi-sectorial approach (SUN Movement, 2021). The SUN Movement brings together stakeholders from various sectors, including agriculture, health, and education, to coordinate efforts to address malnutrition. This approach has been successful in countries such as Nepal, where the government has implemented policies to promote the production and consumption of nutrient-rich foods. Another successful example is the Home Grown School Feeding (HGSF) program in Brazil, which links smallholder farmers with school feeding programmes (FAO, 2019). The HGSF program provides schools with locally sourced, nutrient-rich foods, while also supporting smallholder farmers by creating a market for their products. This approach has been successful in improving the nutritional status of school children, while also supporting local agriculture. The lack of integration between nutrition programs and agriculture in Nigeria has significant public health consequences. However, there are successful examples of nutrition-agriculture integration in other countries that can serve as models for Nigeria. By adopting a multi-sectorial approach and promoting coordination between stakeholders, Nigeria can address the root causes of malnutrition and improve the health and well-being of its population.

#### **GOVERNMENT POLICIES AND INITIATIVES TO ADDRESS THE DISCONNECT BETWEEN NUTRITION PROGRAMMES AND AGRICULTURE IN NIGERIA:**

The Nigerian government has recognized the importance of

linking nutrition programs with agriculture to address the issue of malnutrition in the country. Several policies and initiatives have been implemented to promote coordination between these two sectors. One such initiative is the National Policy on Food and Nutrition (NPFN), which was launched in 2016 (Federal Ministry of Health, 2016). The NPFN aims to address malnutrition through a multi-sectorial approach, which includes promoting the production and consumption of nutrient-rich foods. The policy recognizes the importance of agriculture in addressing malnutrition and calls for greater coordination between the agriculture and health sectors. Another initiative is the National Strategic Plan of Action for Nutrition (NSPAN), which was launched in 2014 (Federal Ministry of Health, 2014). The NSPAN aims to reduce malnutrition in Nigeria through a range of interventions, including promoting the production and consumption of nutrient-rich foods. The plan recognizes the importance of agriculture in addressing malnutrition and calls for greater coordination between the agriculture and health sectors. In addition, the Nigerian government has implemented several programmes aimed at promoting agriculture and improving food security. For example, the Anchor Borrowers' Program provides loans to smallholder farmers to support the production of crops such as rice, wheat, and maize (Central Bank of Nigeria, 2021). This programme has the potential to increase the availability of nutrient-rich foods and support the integration of nutrition programmes with agriculture.

Despite these policies and initiatives, there is still a disconnect between nutrition programs and agriculture in Nigeria. Greater efforts are needed to promote coordination between these two sectors and ensure that farmers are producing the types of crops that are needed to address malnutrition. The Nigerian government has recognized the importance of linking nutrition programmes with agriculture to address the issue of malnutrition in the country. Several policies and initiatives have been implemented to promote coordination between these two sectors. However, more needs to be done to ensure that these policies are effectively implemented and that farmers are producing the types of crops that are needed to address malnutrition.

#### **Analysis of Existing Government Policies and Initiatives Related to Agriculture and Nutrition in Nigeria:**

The Nigerian government has implemented several policies and initiatives related to agriculture and nutrition. These policies and initiatives aim to address the issue of malnutrition in the country by promoting the production and consumption of nutrient-rich foods. However, there are still challenges in linking nutrition programs with agriculture, which has significant public health consequences. One of the key policies related to agriculture and nutrition in Nigeria is the Agricultural Promotion Policy (APP), which was launched in 2016 (Federal Ministry of Agriculture and Rural Development, 2016). The APP aims to promote agricultural productivity and food security in the country, with a focus on increasing the production of crops such as rice, maize, and cassava. While the APP recognizes the importance of nutrition, there is limited emphasis on the production of nutrient-rich foods such as fruits and vegetables. Another policy related to agriculture and nutrition is the National Policy on Food and Nutrition (NPFN), which was launched in 2016 (Federal Ministry of Health, 2016). The NPFN aims to address malnutrition through a multi-sectorial approach, which includes promoting the production and consumption of nutrient-rich foods. The policy recognizes



the importance of agriculture in addressing malnutrition and calls for greater coordination between the agriculture and health sectors. However, there is limited emphasis on the role of smallholder farmers in producing nutrient-rich foods. In addition, the Nigerian government has implemented several initiatives aimed at promoting agriculture and improving food security. For example, the Anchor Borrowers' Program provides loans to smallholder farmers to support the production of crops such as rice, wheat, and maize (Central Bank of Nigeria, 2021). While this program has the potential to increase the availability of nutrient-rich foods, there is limited emphasis on the production of fruits and vegetables. Overall, while the Nigerian government has implemented several policies and initiatives related to agriculture and nutrition, there is still a disconnect between these two sectors. There is limited emphasis on the production of nutrient-rich foods such as fruits and vegetables, and there is a lack of coordination between nutrition programs and smallholder farmers. To address the issue of malnutrition in Nigeria, greater efforts are needed to promote coordination between these two sectors and ensure that farmers are producing the types of crops that are needed to address malnutrition.

#### **Evaluation of The Effectiveness and Challenges of Policies:**

Nigeria is a country with a high burden of malnutrition, particularly among children under five years of age. Malnutrition is a significant public health problem in Nigeria, with a prevalence rate of 37% among children under five years of age (National Bureau of Statistics, 2019). The Nigerian government has implemented several nutrition programs to address this issue, but these programs have not been effectively linked with agriculture. This paper evaluates the effectiveness and challenges of these policies. The Nigerian government has implemented several nutrition programs to address malnutrition. These programs include the National Policy on Food and Nutrition, the National Strategic Plan of Action for Nutrition, and the National Plan of Action for Food and Nutrition. These policies aim to improve the nutritional status of Nigerians by increasing access to nutritious food, promoting healthy eating habits, and providing nutrition education. Despite the implementation of these policies, malnutrition remains a significant public health problem in Nigeria. The prevalence of malnutrition among children under five years of age has remained high, and there has been little improvement in the nutritional status of Nigerians. This suggests that these policies have not been effective in addressing malnutrition in Nigeria.

One of the main challenges of linking nutrition programs with agriculture in Nigeria is the lack of coordination between the agriculture and health sectors. The agriculture sector is responsible for food production, while the health sector is responsible for nutrition. There is a need for collaboration between these sectors to ensure that nutritious food is available and accessible to Nigerians. Another challenge is the lack of infrastructure and resources to support agriculture. Many farmers in Nigeria lack access to modern farming techniques, irrigation systems, and storage facilities. This limits their ability to produce nutritious food and sell it in the market. Malnutrition remains a significant public health problem in Nigeria, despite the implementation of several nutrition programs. The lack of coordination between the agriculture and health sectors and the lack of infrastructure and resources to support agriculture are some of the challenges of linking nutrition programs with agriculture in Nigeria. To address

malnutrition effectively, there is a need for collaboration between the agriculture and health sectors and investment in agriculture infrastructure and resources.

#### **RECOMMENDATIONS AND SOLUTIONS**

Nigeria is facing a significant public health problem of malnutrition, particularly among children under five years of age. Despite the implementation of several nutrition programs, the link between nutrition programs and agriculture has not been effectively established. This paper proposes policy recommendations, discusses the role of education and awareness, and suggests community-level interventions and collaborations to bridge the gap between nutrition programs and agriculture in Nigeria in effect ensuring optimized public health outcomes.

**Policy Recommendations:** To bridge the gap between nutrition programs and agriculture, the Nigerian government should implement policies that promote collaboration between the agriculture and health sectors. This can be achieved by establishing a joint task force that includes representatives from both sectors to develop and implement policies that promote the production and consumption of nutritious food. The government should also invest in agriculture infrastructure and resources to support farmers in producing nutritious food. This can be achieved by providing farmers with access to modern farming techniques, irrigation systems, and storage facilities. The government should also provide incentives to farmers who produce nutritious food, such as tax breaks and subsidies.

**Roles of Education and Awareness:** Education and awareness play a crucial role in promoting the integration of nutrition programs and agriculture. The government should invest in nutrition education programs that promote healthy eating habits and the consumption of nutritious food. These programs should be targeted at both farmers and consumers. The government should also promote awareness of the link between nutrition programs and agriculture through public campaigns and media outlets. This can be achieved by partnering with media outlets to promote the consumption of nutritious food and the importance of agriculture in promoting public health.

**Community-Level Interventions and Collaborations:** Community-level interventions and collaborations can also play a significant role in promoting the integration of nutrition programs and agriculture. The government should partner with community-based organizations to promote the production and consumption of nutritious food. This can be achieved by providing training and resources to community-based organizations to support their efforts in promoting healthy eating habits. The government should also establish community gardens and farmers' markets to promote the production and consumption of nutritious food at the community level. These initiatives can be supported by providing farmers with access to resources and training to produce nutritious food. Bridging the gap between nutrition programs and agriculture is crucial to addressing the public health problem of malnutrition in Nigeria. The government should implement policies that promote collaboration between the agriculture and health sectors, invest in agriculture infrastructure and resources, promote nutrition education and awareness, and support community-level interventions and collaborations.

- Develop and implement a national nutrition-sensitive agriculture policy and establish a policy framework that

integrates nutrition and agriculture, with clear goals, objectives, and strategies.

- Establish a multisectoral coordination mechanism and create a platform for stakeholders from nutrition, agriculture, health, and other relevant sectors to collaborate, share knowledge, and coordinate efforts.
- Promote climate-smart agricultural practices supporting farmers in adopting climate-resilient agricultural practices, such as conservation agriculture, agroforestry, and integrated pest management.
- Support nutrition education and awareness: Develop and implement nutrition education programs that promote healthy diets, meal preparation, and food safety practices.
- Foster private sector engagement: Encourage private sector investment in nutrition-sensitive agriculture, including support for small-scale farmers, agricultural research, and development of nutritious food products.

### Implications To SDGs (WFP, 2024)

#### SDG 1: No Poverty

- Reducing poverty: Strengthening the integration of nutrition and agriculture will equally reduce poverty by improving agricultural productivity, increasing income, and enhancing food security.
- Improving livelihoods: The study's focus on nutrition-sensitive agriculture can help improve livelihoods by promoting sustainable agricultural practices, enhancing nutrition knowledge, and supporting small-scale farmers.

#### SDG 2: Zero Hunger

- Ending hunger: The study's emphasis on improving food security and nutrition emphasized on the urgent need to end hunger by increasing access to nutritious food, reducing malnutrition, and promoting sustainable agriculture.
- Improving nutrition: The study's focus on nutrition-sensitive agriculture eulogized the significance of improving nutrition by promoting the production and consumption of nutritious food, enhancing nutrition knowledge, and supporting nutrition education.

#### SDG 3: Good Health and Well-being

- Reducing malnutrition: The study's emphasis on improving nutrition stressed on the importance of reducing malnutrition by promoting the production and consumption of nutritious food, enhancing nutrition knowledge, and supporting nutrition education.
- Improving public health: The study's focus on nutrition-sensitive agriculture has highlighted the need to improve public health by reducing the burden of diet-related diseases, promoting healthy eating habits, and supporting nutrition education.

#### SDG 12: Responsible Consumption and Production

- Promoting sustainable agriculture: The study's emphasis on nutrition-sensitive agriculture has underpinned the need to promoting sustainable agriculture by supporting climate-smart agricultural practices, reducing waste, and promoting efficient use of resources.

- Reducing food waste: The study's focus on improving food security and nutrition highlighted the need to reduce food waste by promoting efficient food production, processing, and distribution systems

#### SDG 17: Partnerships for the Goals

- Fostering partnerships: The study's emphasis on strengthening the integration of nutrition and agriculture and calls the attention to foster partnerships among stakeholders, including policymakers, practitioners, farmers, and private sector entities.
- Promoting collaboration: The study's focus on nutrition-sensitive agriculture pinpointed the need to promote collaboration among stakeholders to address the complex challenges of hunger, malnutrition, and diet-related diseases.
- By addressing the intersections between nutrition, agriculture, and sustainable development, this study has recommended and contributed to achieving several SDGs and promoting a more equitable, sustainable, and food-secure future for Nigeria.

**SUM-UP:** Nigeria is a country with an exponential growing population and an increasing demand for food. With agriculture being one of the main sources of livelihood for the majority of the population, there is no denying the critical interdependence between agriculture and nutrition. The nexus of nutrition and agriculture in Nigeria goes beyond just ensuring food security, but also promoting better public health and well-being. Nigeria has been facing major challenges related to malnutrition and poor health outcomes. Malnutrition is a key contributor to the high levels of morbidity and mortality in the country, especially among children and women. Inadequate nutrient intake is prevalent among many households due to limited access to diverse and nutritious foods. This is further exacerbated by poor agricultural practices, low productivity, and limited access to markets and infrastructure. Improving nutrition and agriculture should be viewed as a joint effort. A responsive agricultural sector that prioritizes nutrition-sensitive food production can help ensure food security and increase access to nutritious food. At the same time, improved nutrition enhances the productivity of farmers thereby fostering greater economic growth in the agricultural sector.

There is a need to strengthen the integration of nutrition into agricultural policies, programmes, and interventions in Nigeria. The integration of nutrition into the agriculture sector requires a multi-sectoral and multimodal approaches that involve collaboration between different stakeholders, including policy makers, researchers, farmers, food processors, and consumers. To achieve better integration, government policies should emphasize nutrition-sensitive agriculture that prioritizes the production and consumption of diverse and nutritious foods. This can be achieved through crop diversification and promoting the production of nutrient-dense crops that can be easily accessible to consumers. Additionally, the consumption of nutrient-rich food should be encouraged through education, information, and awareness-raising campaigns targeted at the general public. Investing in research and innovation is also key to improving the nexus of nutrition and agriculture in Nigeria. This will involve the development of new agricultural technologies that improve productivity while enhancing the nutritional content of the food produced. Consumer preferences should also be taken into account when developing new

products to ensure acceptability and sustainability over the long term. Finally, improving the nexus of nutrition and agriculture in Nigeria will have a multiplier effects in achieving food security and improving public health and well-being. Integrating nutrition into agricultural policies and programmes requires the engagement of all stakeholders and a multi-sectoral approaches. Investing in research and innovation is also fundamental to addressing the challenges related to malnutrition in the country. Ultimately, a holistic approach that prioritizes the integration of nutrition into agriculture will help in transforming the food system in Nigeria and enhance the lives of its citizens. Overall, nutrition and agriculture are two critical pronged components that are interconnected and can help to achieve food security, sustainable development goals, and universal health coverage. Therefore, it is vital to promote and reinforce the connection between the two sectors to achieve the desired outcomes, particularly in public health.

## CONCLUSION

This paper has highlighted the public health consequences of failing to link nutrition programmes with agriculture in Nigeria. It has shown that malnutrition is a significant public health issue in Nigeria, with high rates of stunting, wasting, and underweight among children under five years old. The essay has also demonstrated that agriculture plays a pivotal role in addressing malnutrition, as it provides the necessary nutrients for a healthy diet and well-being. However, despite the importance of agriculture in addressing malnutrition, nutrition programmes in Nigeria have not been adequately harnessed and linked up with agriculture. This failure has resulted in a lack of appropriate coordination between the agriculture and health sectors, leading to a fragmented approach to addressing malnutrition. Reiterating the importance of linking nutrition programmes with agriculture for public health in Nigeria, it is essential to recognize that agriculture is not only a source of food but also a source of income and livelihood for many Nigerians. Therefore, linking nutrition programmes with agriculture can result in a huge and evidential impact on both food security and economic development. To address this issue, policymakers, stakeholders, and the public must work together to develop a coordinated approach to addressing malnutrition in Nigeria. This approach should involve integrating nutrition programmes with agriculture, promoting the production and consumption of nutrient-rich foods, and improving access to healthcare services.

In conclusion, therefore, it is crucial to recognize that addressing malnutrition in Nigeria requires a multi-sectorial and multimodal approaches that involve linking nutrition programmes with agriculture. By working together, policymakers, stakeholders, civil Societies and the public can improve the health and well-being of Nigerians and as well promote sustainable economic development and by so doing actualizing the attainment of the critical aspects of the Sustainable Development Goals -1,2,3, 12. and 17. This study reaffirms the important role and inclusive nature of the Committee on World Food Security and upholds the Rome Declaration on Nutrition and Framework for Action. Therefore there is urgent for all hands to be deck to devote resources to developing rural areas and sustainable agriculture and fisheries, supporting smallholder farmers, especially women farmers, herders and fishers in developing countries, particularly least

developed countries(.Rome Declaration on World Food Security and the World Food Summit Plan of Action, 1996)

## REFERENCES

1. Central Bank of Nigeria. (2021). Anchor Borrowers' Program. Retrieved from <https://www.cbn.gov.ng/Anchor-Programme/>
2. DeMaeyer, E. M, Dallman, P, Gurney, J. Michael, Hallberg, L, Sood, S. K. et al. (1989). Preventing and controlling iron deficiency anaemia through primary health care: a guide for health administrators and programme managers / E. M. DeMaeyer, with the collaboration of P.
3. FAO. (2018). The state of food security and nutrition in the world 2018: Building climate resilience for food security and nutrition. Rome: FAO.
4. FAO. (2019). Statistical Yearbook of Nigeria 2019: A Country Statistical Overview. Retrieved from <http://www.fao.org/nigeria/fao-in-nigeria/nigeria-publications/nigeria-statistical-yearbooks/en/>
5. FAO. (2019). Home Grown School Feeding. Retrieved from <http://www.fao.org/home-grown-school-feeding/en/>
6. FAO, WHO, & UNU. (2018). Human Vitamin and Mineral Requirements. Retrieved from <http://www.fao.org/3/y2809e/y2809e00.htm>
7. FAO. (2013). Nutrition-Sensitive Agriculture and Food Systems in Practice: Options for Intervention. Retrieved from <http://www.fao.org/docrep/018/i3308e/i3308e.pdf>
8. Federal Ministry of Agriculture and Rural Development. (2016). National plan of action for food and nutrition. Retrieved from [https://www.nutritionintl.org/content/user\\_files/2017/06/Nigeria-National-Plan-of-Action-for-Food-and-Nutrition-2016-2020.pdf](https://www.nutritionintl.org/content/user_files/2017/06/Nigeria-National-Plan-of-Action-for-Food-and-Nutrition-2016-2020.pdf)
9. Federal Ministry of Agriculture and Rural Development. (2016). Agricultural Promotion Policy. Retrieved from <https://fmard.gov.ng/agricultural-promotion-policy/>
10. Federal Ministry of Health. (2014). National strategic plan of action for nutrition. Retrieved from <https://scalingupnutrition.org/wp-content/uploads/2016/02/Nigeria-NSPAN-2014-2019.pdf>
11. Federal Ministry of Health. (2016). National policy on food and nutrition. Retrieved from <https://extranet.who.int/nutrition/gina/sites/default/files/NGA%202016%20National%20Policy%20on%20Food%20and%20Nutrition.pdf>
12. Food and Agriculture Organization of the United Nations. (2013). Nutrition-sensitive agriculture and food systems in practice: Options for intervention. Retrieved from
13. Food and Agriculture Organization of the United Nations. (2017). Nutrition-sensitive agriculture design guide. Retrieved from <http://www.fao.org/3/a-i7846e.pdf>
14. Food and Agriculture Organization of the United Nations. (2020). Nigeria. Retrieved from <http://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/>
15. Food and Agricultural Organization. (2021). FAO in Nigeria. Retrieved from <http://www.fao.org/nigeria/fao-in-nigeria/en/>
16. Food and Agriculture Organization. (2021). The state of food security and nutrition in the world 2021. Retrieved from <http://www.fao.org/3/cb4472en/cb4472en.pdf>
17. Food and Agricultural Organization( FAO, 1997a.): Simple classification of dietary constituents

18. IFPRI. (2019). Global nutrition report 2019: Action on equity to end malnutrition. Washington, DC: IFPRI.
19. International Food Policy Research Institute. (2021). Nigeria. Retrieved from <https://www.ifpri.org/country/nigeria>
20. National Bureau of Statistics. (2019). Nigeria Demographic and Health Survey 2018. Retrieved from <https://dhsprogram.com/pubs/pdf/FR359/FR359>
21. National Bureau of Statistics. (2019). Multiple indicator cluster survey 2016-2017, survey findings report. Retrieved from <https://www.unicef.org/nigeria/media/1421/file/Nigeria-MICS-2016-17.pdf>
22. Nutrition for Developing Countries: Third Edition Edited by Felicity Savage King, Ann Burgess, Victoria J. Quinn, and Akoto K. Osei. Copyright © Oxford University Press 2024
23. Partnership for Child Development. (2021). Home Grown School Feeding Program. Retrieved from <https://www.imperial.ac.uk/sustainable-agriculture-food-security/partnership-for-child-development/home-grown-school-feeding-program/>
24. SUN Movement. (2021). About the SUN Movement. Retrieved from <https://scalingupnutrition.org/about/>
25. UNICEF. (2020). Nigeria. Retrieved from <https://www.unicef.org/nigeria/nutrition>
26. UNICEF. (2020). Nigeria: Nutrition. Retrieved from <https://www.unicef.org/nigeria/nutrition>
27. UNICEF. (2018). Nigeria Nutrition and Health Survey 2018. Retrieved from <https://www.unicef.org/nigeria/reports/nigeria-nutrition-and-health-survey-2018>

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