

## AGRICULTURAL PRODUCTION, FOOD AND NUTRITION SECURITY IN RURAL BENIN, NIGERIA

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## ABSTRACT

Although agriculture is the major economic activity in Nigerian rural areas, its inhabitants are among the most vulnerable to food and nutrition insecurity. Therefore, any effort aimed at minimizing food and nutrition insecurity must start from rural areas. This study examines agricultural production, food and nutrition security in rural areas of the Benin region in Nigeria, highlighting the major constraints. A measure of household food and nutrition security used in this study is based on dietary intake, real wage rates, employment, and incidence of illness and adequacy norms. This study is based on a food frequency questionnaire survey administered using systematic random sampling technique, participatory assessment technique, interviews with stakeholders and published materials. Some indices employed in measuring food and nutrition security in this paper are physical access, which is measured in relation to availability of agricultural infrastructure such as roads, while economic access is measured in terms of income, expenditure and estimated profit margins. Two pre-tested questionnaires were administered in 20 rural communities in the Benin region to elicit information from respondents were analysed using simple descriptive techniques like charts, tables and percentages. Subsistence agriculture is the mainstay of the studied rural economies and is dependent mainly on rain-fed, low-technology-driven cultivation with no access to modern farm inputs. Farming alone is the main source of income for 57% of the respondents, while fishing and trading account for the other 43%. The study reveals that although 60% of respondents are engaged in agriculture, their access to food and nutrition is insecure due in part to unstable incomes, seasonality of harvest and inadequate health and sanitary conditions. Also, lack of storage facilities in these rural communities has increased post-harvest losses and has reduced farmers'/household incomes, thereby worsening their food insecurity situation. The study also found that rural-urban migration results in shortage of manpower for agricultural activities. Lack of access to fertilizer and poor infrastructure are major factors for the decline in agricultural production in the last five years in the sampled communities. The study recommends the need for a considerable and sustained government investment in agriculture and the provision of basic facilities to support education, health care, sanitation and safe drinking water supply. This will help to ensure food and nutrition security and help to curtail rural – urban migration.

**Key words :** Agriculture, Nutrition Security, Rural households

## INTRODUCTION

Agriculture plays an important role in the development of any nation. It is a primary source of income, food and sustenance for the world's populations. In most developing countries, it is still at the subsistence level but nevertheless, it is a major employer of labour particularly in rural areas. Agriculture provides the means of livelihood for over 70 percent of the population in developing countries and is a major source of raw materials for the agro-allied industries [1]. In advanced nations, the mechanisation of agriculture, high level of technology, modern storage facilities, availability of expansive farmlands as well as credit facilities have contributed immensely to the quality and quantity of food produced.

Few farmers are involved in agriculture in commercial quantities, providing food for over eighty percent of the population in rural Benin. Research in agriculture has also enhanced the introduction of high crop breeds, resistant strains as well as improved storage. These characteristics of agriculture coupled with high literacy levels and pro-agricultural government policies in some countries of the developed world tend to engender food and nutrition security. On the contrary, agriculture in developing nations is predominantly subsistence in nature, with use of crude implements on limited acreage of farms resulting in small total outputs. Poor storage techniques also prevail, resulting in large postharvest losses, thus contributing to food insecurity of their teeming populations.

For African, food and nutrition security is closely tied to agricultural productivity. Due to low food availability and profound poverty, an estimated 200 million people on the African continent are undernourished and their numbers have increased by almost 20 percent since the early 1990s [2]. In order to attain the Millennium Development Goal on Agriculture and food security to halve hunger by 2015, there is need to examine the Nigerian situation with a view to suggest ways by which these goals can be attained. This study attempts to assess the state of agriculture, food and nutrition security in rural areas of Nigeria with an empirical illustration from rural Benin, in Edo State.

Nigeria's population is expected to rise significantly in the next decade yet the capacity to satisfy the growing food demand has remained an issue of great concern. This is mainly due to poorly focused and inconsistent government agricultural policies. The agricultural sector's contribution to Nigeria's Gross Domestic Product (GDP) depreciated with the discovery and exploitation of crude oil in the country. As agriculture lost its place of pride in the Nigerian economy, middle-aged youth gradually streamed from rural areas to urban centres seeking employment in, white collar jobs, the oil sector and other industries. Within the next decade, there was a steady decline in domestic food production and the government resorted to food importation to make up for this deficit [3,4]. While this temporarily provided disguised food security for the nation, in less than a decade, agriculture's share of the gross domestic product (GDP) declined from roughly one-half to less than 30%. Its erstwhile pre-eminence as a generator of state revenue and foreign exchange vanished

[5]. Local farmers who relied solely on agriculture as their means of livelihood experienced a steady decline in their income and there was a corresponding increase in poverty [3].

Rural areas in Nigeria, where farming is the predominant economic activity are beset with a multiplicity of problems that result in food and nutrition insecurity. These include poor physical, social, and institutional infrastructures, inconsistencies as well as failures in government agricultural policies and strategies, high illiteracy levels, poverty, poor farming strategies, lack of credit facilities, the role of market intermediaries as well as other structural and operational encumbrances in marketing of agricultural products [6]. With the national poverty line estimated at 43%, empirical studies presently reveal that more than 70% of the poor presently live in rural areas on less than one US dollar a day [4,7,8,]. This endemic poverty of the rural population, which is replicated by their low income earnings restricts their access to the quality and quantity of food they can purchase and consume for healthy living. Similarly, over 75 percent of undernourished people are in low income rural areas of developing countries [9]. An undernourished and unhealthy population cannot create wealth for a nation's development; thus, there is urgent need for improvement in the incomes of the agricultural sector in order to enhance access to quality and nutritious food. A study of the nutritional status of school children in urban and rural areas of Umuahia Local Government Area of Abia State, Nigeria, showed that 90% of rural children and 70.9% of urban children were underweight for height. This indicates serious under nourishment of rural children [10]. A similar study in Abeokuta noted that the diets of these children constituted mainly roots, tubers, cereals and legumes but low consumption of fruits, vegetables and animal food; diets were deficient in vitamin A and iron [11]. These empirical studies clearly indicate that food and nutrition security is a major challenge in Nigerian rural areas. This situation has also been aggravated by rapid population growth, policy inadequacies and inconsistencies, unhealthy food storage and processing techniques [12].

Rural Benin constitutes a major source region for staple foodstuffs to other states such as Lagos, Delta, Ondo, Oyo, Imo and Anambra as well as the Benin urban area [13]. It is against this backdrop that the authors examine agricultural production and assess the food and nutritional security of rural households in rural Benin. First, the paper attempts to ascertain if these rural farmers, who are the main food producers in the region are both food and nutritionally secure.

This study relies on the concept of Sustainable Agriculture and Rural Development defined by the FAO as a process which is ecologically sound, environmentally sustainable, economically viable, socially just, culturally appropriate, humane, based on a holistic scientific approach and productive over the long term [14]. Similarly, food security is defined as the situation when all people at all times have physical and economic access to sufficient, safe and nutritious food for a healthy and active life [15]. Food security and nutrition security are not synonymous but complementary. Nutrition security is achieved when there is secure access to food, in addition to other interconnected factors such as good sanitary environment and adequate health

services. This ensures a healthy and active life for all household members. Food security is one of the determinants of nutritional status, and malnutrition would have a major effect on productivity and hence purchasing power of the rural population. Food security means that all people at all times have both physical and economic access to the basic food they need [16]. While food supply is a critical component of food security, many lack the economic means to procure it or the education to enable them improve dietary intakes and health status for their children. These preceding definitions provide the conceptual framework for this study.

Rural Benin is largely agrarian and constitutes a major source region of staple foodstuff supplies in Nigeria [13]. In the midst of this seeming abundance, farmers are still poor and their families malnourished. The paper attempts to ascertain from these views, the interrelationship between the state of agriculture in rural Benin and the food and nutrition security of these rural dwellers.

## MATERIALS AND METHODS

### Materials and Methods

The study utilized a food frequency questionnaire survey. Participating and undeclared questionnaire pre-tests were conducted to help determine whether the questionnaire was understandable to the respondents and to ensure the overall standardization of the survey and choice of analysis. Four hundred and fifty (450) pre-tested questionnaires were administered to the adult population of the 20 randomly selected rural communities but only 343 questionnaires were retrieved from the respondents. The questionnaire was used to elicit information on demographic characteristics, socio-economic and cultural infrastructure, dietary intake, incidence of illness, real wage rates, employment, and adequacy norms. Systematic random sampling technique was used to administer the questionnaires in the communities. In each neighbourhood or quarter, four streets were randomly selected and 5 questionnaires were assigned for administration in each. Every fourth house on both sides of the street was selected to make up the required sample size. In cases where the sample size was not achieved in one street due to its short nature, it spilled over to the adjoining street. The questionnaire was administered to the household head or any adult (18 years and above) in each of the selected house. Structured household interviews were also conducted in 5 of the 20 randomly selected communities to enable the researchers get an insight into the broad views on agricultural development and food security issues in the study area.

## RESULTS

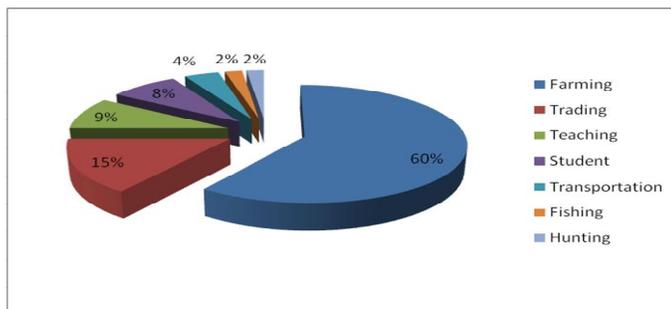
### Demographic characteristics

The study revealed that 128 (64%) of respondents are males and 72 (36%) are females. Sixty nine per of respondents belong to the age bracket of 30-40 years while 11% and 10% represents those between ages 20 and 30 years and 40 years and above, respectively. While the married were 70%, the single, divorced, widowed and separated were 20%, 4%, 4% and 2%, respectively. Eighty eight percent of household heads were fathers, 4% mothers, 6% sons and 2% daughters. The Benin ethnic group constituted 75%, Esan 14%, Igbo 4%, Yoruba 2%, while Ukuwani, Urhobo and Isoko

made up 5% collectively. Most of the respondents (63%) had lived in the area for more than 20 years while those who have lived at least 10 years and 5 years constitute 26% and 11%, respectively. In terms of their educational qualification, those who had NCE or OND made up 16%, secondary school leaving certificate 21%, primary school 23% and no formal education 40%.

### Employment and Occupation

Agriculture represents the economic base of the communities. Most of the farmers (60%) grow food crops like cassava, plantain, banana, yams, coco yams, rice, maize, beans, pineapple. Only 4% of those engaged in farming grow cash crop (oil palm). Other areas of employment are trading (15%), teaching (9%), transportation (4%), fishing (2) and hunting (2%). Eight percent of the respondents were students and not employable.



**Figure 1: Occupation/status of respondents**

### Household Income and Food Security

The real income earnings of a household give a reflection of their food and nutrition security situation. The respondents were generally low income earners with only 14% earning above N20, 000 (133 US\$) monthly. A bulk of the respondents (41%) earn between N5,000-N10,000 (33 - 67 US\$) while 15%, 14% and 16% represent those in the income group earning less than N5,000 (33 US\$), N10,000(67 US\$)-N15,000(100 US\$) and N15,000-20,000 (100 - 133 US\$) respectively. These figures indicate that 56% earn below N10, 000(67 US\$) monthly and 86% earn less than N20, 000 (133 US\$) monthly. On the weekly average each of these families earn about N350(2 US\$) and N700 daily(5 US\$). 56% of respondents argued that their unstable incomes accounted for irregularity in rural households' access to food and nutrition. 50% of respondents spend half of their total monthly income on food while 12% and 38% spend all and one third, respectively of their monthly income on feeding. In a financial year, 45% of respondents are able to save less than N10, 000(67 US\$), while 46% save between N15, 000 – N30, 000 (100 - 200 US\$). Only 9% were able to save above N40, 000 (266 US\$) annually due to additional incomes repatriated home by family members, friends and relatives in the cities or overseas.

### **Agriculture and Farm yield**

Agriculture exposed to the vagaries of weather conditions is unsustainable, within the context of guaranteeing food security for a growing population. The rise in world food prices last year to record levels heightened the chronic underinvestment in agriculture in developing countries, where three quarters of the poor live in rural areas [16]. Forty two percent of respondents reveal that farm yields have steadily declined in the past five years. Thirty seven percent identified shortage of manpower/rural-urban migration as a major reason for declining farm yield. On the other hand, (24)55% state that fish yield has also steadily declined in the last five years. Other factors are: lack of access to fertilizer (30%) by farmers, drying of river valley (42%) due to changing climate, overfishing (38%), industrial water pollution (14%) and lack of adequate storage facilities (6%) as been responsible for declining fish yield in the communities in the last five years. (Table 1 shows the reasons adduced for agricultural decline in rural Benin).

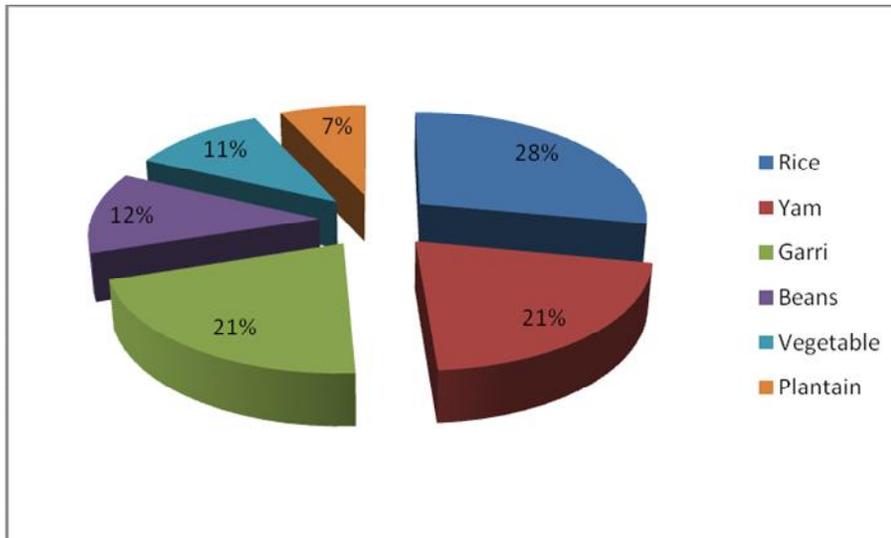
### **Infrastructure and Food security**

Infrastructure is measured here in terms of available transportation and storage facilities for agricultural produce. Food security can be assured if farmers have adequate storage facilities as well as the technological know-how in preservative strategies. Fifty nine percent of respondents attest that they do not have storage facilities for their produce. Field results indicate that some families consume most of their harvest (32%), or sell at cheaper rate (37%) to dispose of the excess products during harvest season as supply surpasses demand. Others (26%) sell at normal prices, (5%) sell at higher prices. In general, traders tend to risk complete income loss if the demand does not meet with the supply and the goods perish. In line with the view of the FAO (1996) food security is concomitant with physical access to food [17]. In this regard, 82% of respondents indicate that bad roads are a major hindrance in their bid to sell their agricultural products. Correspondingly, only 36% transport their farm produce to the market using vehicles. Motor cycle (24%), bicycle (21%), human portorage (13%) and wheelbarrow (6%) were alternatives but less convenient means of transporting their farm produce to the market.

### **Food and Nutrition Security**

Food and nutrition is a crucial factor in immune-system build-up, brain and organ development, lean body mass, basal metabolic rate and general health of an individual. Vitamin A deficiencies in children reduce their ability to resist infection and contribute to the deaths of more than half a million African children annually [2]. Most of the respondents (78%), who had farms indicated that they had access to regular food supply during the harvest season. Agricultural foodstuffs were managed for about seven months after harvest. This situation changes markedly during the planting season. Others (22%) who do not have farms or gardens of their own also experience temporal or periodic food security during the harvest season as their income becomes relatively sufficient to purchase food products whose prices have reduced due to excess supply. This scenario shows that although they may have access to food, that access is not secure. As shown in figure 2, major food consumed

in the households surveyed included rice (28%), yam (21%), garri (21%), beans (12%), vegetables (11%) and plantain (7%).



**Figure 2: Major food surveyed in household surveyed**

Many Nigerians are not meeting their nutritional requirements. The average intake of 9gms of protein per day in the country as against the recommended rate of 65gm is grossly inadequate and is responsible for growth failure in children and weight loss in adults [4, 15]. However, the high intake of carbohydrate food like garri, rice and yam indicates unbalanced diet and poor nutrient intake of rural people. Forty percent of respondents indicated that they hardly ever consumed vegetables in their dietary intake. Empirical studies have shown that daily consumption of leafy vegetables potentially minimizes the risk of breast and lungs cancer, cardiovascular ailments and strengthen the immune-system [16]. The respondents identified poor preservation technique and seasonality as a major constraint on their consumption of vegetables.

### Health and Nutrition

Consumption of unbalanced diet coupled with poor sanitary environment has increased the vulnerability of rural dwellers to numerous disease conditions. Common illnesses in the surveyed communities are malaria (69%), diabetes (21%), tuberculosis (3%), diarrhoea (5%) and whooping cough (2%). The duration of such sickness range from 1wk (59%), 1<sup>1</sup>/<sub>2</sub> wks (21%), 2wks (13%), 3wks (2%), 1month (2%) and 2months (3%). Vulnerability to these disease conditions can be minimized through balanced diet intake, access to affordable health care and good sanitary conditions. Unfortunately, 72% of respondents had no access to affordable health service while 56% rates the sanitary condition of their environment as poor. Also, most of the rural dwellers do not know what a balanced diet entails hence even when they have access to food it is not in the right quality and quantity.

## DISCUSSION

The occupational structure of the rural economy shows the viability of the agricultural sector in creating employment. The observed low income earnings in rural communities have multiple implications for rural living standards. First, it limits access to food and nutrition thus increasing their vulnerability to disease. Secondly, their ability to save for investment is highly reduced leading to a vicious cycle of poverty. Considering their large family sizes, it is clear that rural people have limited access to food generally. Their ability to access nutritious food is even almost farfetched. Their low household incomes indicate their inability to afford a high standard of living. The earnings show that a large population of the rural populations are not financially secure and as such may not have enough money to provide nutritious food. Since the rural population is mainly dependent on agriculture as their means of livelihood, a decline in productivity and yield will negatively impact their household income; reduce household access to food and result in an overall decline in household standard of living.

The import of infrastructure in enabling food security and sustainable food production is its ability to prevent post harvest losses in terms of adequate marketing facilities that will enhance trade. Lack of storage facilities and crude processing technique which pervade in the Benin region contributes largely to increased post-harvest losses of food crops thus worsening the food deficit situation. Marketable surpluses are sold at very cheap rate resulting in the farmers' inability to break even or make adequate profit that will enable them purchase nutritious food or meet their other household necessities.

Many Nigerians are not meeting their nutritional requirements. For instance, the average in-take of 9gms of protein per day as against the recommended rate of 65gm is grossly inadequate. Protein Energy Malnutrition (PEM) deficit is the most important health problem in Nigeria causing growth failure in children and loss of weight in adults [8, 18].

Irrespective of food availability or the nutritional content of such food, nutrition security requires the fulfilment of certain conditions [2, 16]. These conditions do not exist for a large section of the Nigerian rural population. Insufficient food supply, poor sanitary conditions and clean water supply, poverty typified by low income earning, lack of knowledge and education on nutritional standards and ineffective health care service provision characterize these rural areas. Strategies to tackle food and nutrition insecurity in the country and the African continent must include sustained investments in agriculture, health care, education, sanitation, and access to safe water supply.

## RECOMMENDATIONS

To enhance their agricultural production and livelihoods, 70 (69%) of the respondents suggest various requirements such as access to credit facilities for investment, 16 (16%) modern farming equipment, 3 (3%) extension service and improved crop variety, 12 (12%) good and accessible roads. Others are functioning markets and health care facilities. This study has shown that the agricultural sector requires increased government investment in rural development projects to increase not only food production, but also curtail rural-urban migration which has been identified as a major source of manpower drain for agricultural production activities in rural Benin. Improved seedlings of rice, beans, yam and plantain suckers should be made available to farmers to increase their production. Storage facilities should also be provided in rural communities to avoid waste during harvest season as post-harvest losses increases the food insecurity of small-farm owner households that dominate rural areas in Benin. Farmers should be granted easy access to micro credit support to enable them procure farm inputs. If success is to be achieved in ensuring food security in Nigeria, there is need for sustained increase in budgetary allocation to the agricultural sector.

Government should provide rural infrastructure and social amenities. In addition, strategies to improve nutrition security must involve rural education on good feeding habits and the constituents of a balanced diet. This can be achieved by the organization of food and nutrition seminars and enlightenment campaigns. In this regard the female folks should be giving preference since they are responsible in most cases for managing household food affairs.

There is also need for an improvement in the real income of rural inhabitants through effective implementation of poverty reduction programmes and provision of the enabling economic environment.

## CONCLUSION

Food and nutrition security is a prerequisite for economic growth and development. Nigeria's quest for economic prosperity should begin with the provision of food and nutrition security for her rural population. This would involve considerable and sustained investment in agriculture and the provision of basic facilities to support education, health care, sanitation and safe drinking water supply.

**Table 1: Reasons Adduced for Agricultural Decline in Rural Benin**

Farm Yield	Number (%)	Fish Yield	Number (%)
Shortage of manpower/Rural urban migration	28 (37%)	Drying of river valley	18(42%)
Communal clashes over land issues	2(2%)	Lack of storage facilities	11(26%)
Lack of fertilizers	22 (30%)	Industrial water pollution	6 (14%)
Lack of storage facilities	10 (13%)	Others	8(18%)
Poor infrastructure	8(10%)		
Others	6(8%)		
Total	76(100%)		43(100%)

Source: Fieldwork

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