

CONTRIBUTIONS OF HOMESTEAD AGRICULTURE TO FOOD SECURITY AMONG URBAN HOUSEHOLDS IN ABAKALIKI METROPOLIS OF EBONYI STATE, NIGERIA

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ABSTRACT

Despite increasing discourse about the potentials and impacts of urban agriculture to households' food security status in urban centres, it seems there is little or no empirical evidence on the contributions of homestead agriculture to food security of urban households in Abakaliki metropolis of Ebonyi State, Nigeria. Consequently, this employed combination of multistage random and purposive sampling techniques, comprised 120 respondents to assess this study. Primary data used for the study were collected with the aid of structured questionnaire that was administered to sampled respondents. Both descriptive and inferential statistics were used for the study in accordance with the specific objectives. The result revealed that homestead farmers in Abakaliki metropolis engaged mainly in the production of five classes of food crops and livestock, namely; leave vegetables such as ugu (87.5), spinach (71.7%) and bitter leaf (65.8%); roots and tube; (cassava (66.7%) and yam 54.2%); cereal (maize (60.8%), spice (pepper, 58.3%) and livestock (poultry, 52.5%). The study identified food security, economic security and nutritional security as the three (3) major factors that influenced homestead agriculture in Abakaliki metropolis. The food security index showed that 52.5% of the urban households were food secure while 47.5% of them were food insecure. Institutional, tenureship and economic factors were identified and extracted as the constraints to homestead agriculture. The study recommended the creation of urban farm estate to encourage residents to have access to land for urban agriculture at a reduced rate; and development of all-inclusive programmes that will enhance urban farmers' access to production inputs and advisory services.

Keywords: Food crops, Livestock, Food Security, and homestead farmers

Introduction

Agriculture constitutes the main source of employment of the majority of the world's poor. Ogunniyi, Fanifosi and Komolafe (2017) reported that as of 2004, employment in agriculture accounted for the share of 53 percent of the total workforce in total employment in developing countries. Agriculture is by far the widest spread form of human activity and it is more basic than any other industry (World Bank, 2008). Even, in the machine age, agriculture of one kind or another provides a livelihood for more than three quarters of the human race and creates employment for millions of people across the world. In Nigeria, agriculture provides over 40% of gross domestic product (GDP) with about 70% of the population productively engaged in farming (Ayinde, Muchie, Babatunde, Adewumi, Ayinde and Ibitoye, 2012), thus, making the country an agrarian economy. Although, agriculture in Nigeria is mainly rural phenomenon; recent evidence

suggests that agricultural activities are been carried in urban centres in different forms such as backyard and homestead agriculture (FAO, 2008; Ogunniyi *et al.*, 2017).

Homestead farm can be regarded as the farm located around the house for the production and rearing of varieties of food crops and livestock for consumption, income generation and environmental sustainability. Adesope and Nwankwo (1996) observed that homestead farmers are those individuals who cultivate or plant crops behind their houses or close to their houses. This is why it is sometimes called backyard farming. Onueunwa and Adesope (2006) noted that the ease of access to food crops is one of the overriding factors responsible for this practice. Furthermore, Francis (1985) in Mgbada, Adesope and Enyinda (2014) observed that homestead farms are located in the vicinity of the houses which are distinguishable from ordinary fields or distant farms.

Homestead agriculture in urban areas provides employment, income and access to food for urban populations which together contributes to relieve chronic and emergency food insecurity related to breakdowns in food chain distribution. It plays an important role in making food more affordable and in providing emergency supplies of food (Food and Agriculture Organization (FAO), 2000). Urban households that are involved in some sort of farming or homestead farming are more food secure, have a better and more diverse diet, and eat more vegetables than non-farming households (Zezza and Tasciotti, 2008).

Available evidence suggests that homestead agriculture enhances quantities of food for the urban household and other low - income families and also supplements income. Food is a basic necessity of life. Its importance is seen in the fact that it is a basic means of sustenance and adequate food intake, in terms of quantity and quality, is a key for healthy and productive life. The importance of food is also shown in the fact that it accounts for a substantial part of a typical Nigerian household budget (Omonona and Agori, 2007). This prompted Armar-Klemeru (2000) to report that urban poor in Nigeria spend between 60-80% of their income on food, and these actions can have a major impact on household well - being.

A well-developed homestead farm makes a vital contribution to household food supply with substantial quantities of a variety of food all year round. Firstly, homestead farms can produce food for meals and secondly products from the farms can be sold for income to buy other essential things needed by the household (FAO, 2006). Therefore, developing a homestead farm for food production is very important part of attaining adequate food supply for the household. Homestead farm is advantageous because it requires little capital, low risk, recycle wastes, and it is easy to manage. However, United Nations (2005) noted that the above benefits have not been optimally exploited.

Nevertheless, homestead agriculture has been a widely adopted strategy for improving nutritional status of women and children in developing countries, including Nigeria (Sheldon, 1999; Mosha, 1999; Rogerson, 2002). The widespread adoption is reasonable because homestead agriculture is a traditional and sustainable activity of most urban households in developing countries, and the farm produce can be an important source of multiple micronutrients, such as vitamins A, C, and B-complex and iron from fruits, vegetables and other plant sources (Bruinsma and Hertog, 2003). In addition, a

number of studies have suggested other potential benefits of homestead agriculture, including the improvement of household food security and nutritional status as well as increased income (Rogerson, 1992; Rogerson, 2001; van Veenhuizen and Danso, 2007). Despite these empirical evidences, none of these studies seems to have been carried out in Abakaliki metropolis, hence the study to fill the gap. The findings of this study will be beneficiary to urban development agencies and policy makers as a tool for planning and development of urban food security. This will facilitate the development of policy statement for addressing food and nutritional challenges in urban areas. To address the problem, the study characterised the homestead agriculture and its utilization in Abakaliki metropolis; determined the factors that influence homestead agriculture in Abakaliki metropolis; determined the food security of the urban households; and analysed constraints to homestead agriculture in Abakaliki metropolis.

Methodology

The study was carried out in Abakaliki metropolis of Ebonyi State. The metropolis consists of two Local Government Areas (LGAs), namely: Abakaliki and Ebonyi LGAs. The metropolis is delineated into six (6) zones, namely: Kpiri-kpiri area, Abakpa main market area (town centre), rice mill area, Hausa quarters, Timber Shed area, New Layout area etc. The population of people living in Abakaliki metropolis is 151,723 out of which 72,443 are males while 79,280 are females (NPC, 2006). The area lies on latitude 4°N and longitude 8°E (EBADEP, 2008). Although, Abakaliki metropolis has assumed city capital status, it has not lost its agrarian nature. Consequently, most undeveloped plots of land are cultivated with vegetative crops while animals especially poultry are kept on small-scale basis around residential premises.

Combination of multistage random and purposive sampling techniques was used to select the respondents that form the sample size for this study. This was done in the following orders: Firstly, four wards were randomly selected out of the six (6) wards in the metropolis. In the second stage, three (3) major streets that have high intensity of agricultural activities within its vicinity were purposively selected to give a total of twelve (12) streets. Finally, ten (10) inhabitants who practice homestead farming were purposive selected from the 12 streets to ensure that only residents who engage in urban agriculture were selected. Thus, a total of one hundred and twenty (120) homestead farmers that were sampled for the study. Primary data used for the study were sourced with the aid of a structured questionnaire that was administered to the 120 sampled respondents.

Measuring Food Security

In determining food security at the household level, a food security index was constructed. This involved two steps: identification and aggregation process. This method has been applied in several studies whose main focus was to determine the food security status of households (Omotesho, Adewumi, Muhammad-Lawal and Ayinde, 2006; Asogwa and Umeh, 2012; and Amaza, Abdoulaye, Kwaghe and Tegbaru, 2009). The identification process defines the minimum level of nutrition (calories) necessary to maintain healthy living; this is the food security line. The FAO recommended minimum daily energy requirement per adult equivalent is 2,250 kcal; therefore this value defines the food security line for the study. Households which are below the food security line are classified as food-insecure households while those households that are above are classified as food-secured households. Aggregation on the other hand, involves estimating the daily per capita calorie consumption of each household. To do this, the estimated daily calorie supply of the households was divided by the household size adjusted for adult equivalents using the consumption factor for age – sex categories.

$$\text{Food security index (Z)} = \frac{\text{Household's daily per capita calorie supply}}{\text{Recommended daily per capita calorie requirement}} \quad (1)$$

Additionally, food insecurity gap index, food surplus gap index and the headcount ratio of food security were calculated for the sample households based on the food security index (Z). The food insecurity gap (P) measures the extent to which food insecure households on average fall below the food security line and the food surplus gap (S) measures the extent by which food secure households exceeded the food security line. The Headcount index (H) measures the percentage of sampled household that are food insecure/secure. The Head count ratio, food insecurity gap, and food surplus gap is defined as:

$$\bullet \text{ Headcount index (Hfi)} = \frac{MN}{N} \quad (2)$$

$$\bullet \text{ Headcount index (Hfs)} = \frac{LN}{N} \quad (3)$$

$$\bullet \text{ Food insecurity gap index (P)} = 1 - \frac{M \sum Gi}{N \sum Gi} \quad (4)$$

$$\bullet \text{ Food surplus gap index (S)} = 1 - \frac{L \sum Gi}{N \sum Gi} \quad (5)$$

Where M = number of food insecure households; N = total number of households in the sample; L = number of food secure households; Gi = daily per capita calorie deficiency or surplus for ith household; Hfs = headcount index for food secured households; Hfi = headcount index for food insecured households; Yi =

daily per capita calorie consumption on food item of ith households; R= recommended daily per capita calorie requirement.

Results and Discussion

Types and Categories of Homestead Agriculture Produce

This section identifies and categorizes homestead farming into various food classes. The result of the analysis is presented in Table 1. The result indicates that the major vegetables farm by the homestead farmers were ugu (*Teliferia occidentalis*) (87.5%), spinach (green) (71.7%) and bitter leaf (65.8%). The main root and tuber crops were cassava (66.7%) and yam (54.2%) while under cereal; maize (60.8%) was the most produced crop. Pepper (58.3%) and poultry (52.5%) were the most produced under spice and livestock categories respectively.

From the above result, it is obvious that homestead farmers in Abakaliki metropolis engaged mainly in five classes of food crops and livestock, namely; leave vegetables such as ugu, spinach and bitter leaf; roots (tubers of cassava and yam); cereal (maize), spice (pepper) and livestock (poultry). The concentration of homestead agriculture around these classes of food is attributable to the facts that rice, yam and cassava have become the cheapest foods for combating hunger in Nigeria (Omueti, 2004). The higher percentage in poultry farms could be due to the less tedious management of the enterprise and its quickest way of bringing in returns. The higher percentage in maize cultivation could be attributed to the low cost of production associated with the nature of the enterprise (Ogunniyi *et al.*, 2017).

Similar finding has been credited to Ogunniyi *et al.* (2017) who found poultry, maize farm, cassava, yam and vegetables as the major enterprises embarked upon by urban households' farmers for combating food insecurity in Ibadan metropolis, Oyo State, Nigeria. Traditionally, Abakaliki is renowned for its agrarian activities because the primary occupation of the indigenous people is farming. As such even with the upgrade of the city to the status of a capital city, bulk of the indigenous people and even non-indigenes still practice farming, although mostly confined to residential areas due to alternative use of land which has reduced access to land for farming activities in the area.

Factors Influencing Homestead Agriculture

Principal factor analysis was used to determine factors that enhanced homestead agriculture among urban dwellers in Abakaliki metropolis. The summary of the result is presented in Table 2. The result shows that there were three (3) major factors

that influenced homestead agriculture in Abakaliki metropolis. These were: food security, economic security and nutritional security. Each factor was given a denomination that best described or characterized the set of variables contained in it. Factor I was critically examined and named food security due to the variables that loaded high under it. These include: food availability at all times (0.778), and provision of condiments for quick food preparation (0.869), reduces expenses on food purchase (0.645), and provides additional income for household (0.614) loaded high under Component II as such it was named economic security factor. Finally, Component III was examined and named nutritional security because nutritional reason (0.912) loaded high.

Consequently, the desire of urban households to attain food, economic and nutritional securities influences their participation in homestead agriculture in Abakaliki metropolis. Available evidence has shown that engagement of urban households in some sort of farming or gardening is more food secure, has a better and more diverse diet, and eat more vegetables than non-farming households (Zezza and Tasciotti, 2008). Urban agriculture provides economic security through employment, income generation and access to food for urban populous which together contributes to relieve chronic and emergency food insecurity relates to breakdowns in the chain of food distribution. It plays an important role in making food more affordable and in providing emergency supplies of food (Food and Agriculture Organization (FAO), 2000).

The core of urban food and security is attained economic and physical access to food. Economic access refers to the capacity of households to purchase food (Weingartner, 2009) therefore, income is the decisive factor. Therefore, poor income level places a serious constraint to homestead agriculture. Moreso, considering that food expenses for urban low-income households in cities in developing countries including Nigeria often make-up 50-70% of their income. Therefore, changes in income or food price have tremendous impact on household's food security (Zingel *et al.*, 2011). Growing ones own food as much as possible makes best economic sense. Fortunately, if properly developed, the household agriculture can supply a significant proportion of households' daily food needs.

Furthermore, urban agriculture contributes directly to food insecurity by increasing access to food especially fresh nutrient food among populations suffering from food insecurity- the poor, temporarily or permanently vulnerable and children. As the urban

poor are found to be spending 60-80% of their income on food, either of these actions can have a major impact on household well - being (Armar-Klemeru, 2000). The available evidence suggests that urban agriculture enhances quantities of food for the urban farmer and other low - income families and also supplements income.

Food Security Status of the Urban Households

Scholars have submitted that urban agriculture improves household's access to food intake, especially among populations suffering from food insecurity, either through their own self- provisioning which reduces market expenditure or through the use of income generated from the sale of their products to buy other food items. In this view, this section assessed food security and nutritional status of households engaged in homestead agriculture in Abakaliki metropolis. The results are presented in Table 3. From the result, it was observed that 52.5% of the urban households were food secure while 47.5% of them were food insecure. It was further observed that the incidence of food insecurity was 25.4% which suggests that one quarter of the urban households were living below the food insecurity line and are therefore relatively consumption food insecure. The food insecurity gap or depth was 16.3% among the respondents. This indicates that the average shortfall of the total population below the food insecurity line was not too much. The food insecurity severity index was 9.8%. Food severity index of 9.8% means that about ten (10) persons out of every one hundred and twenty (120) households were extremely food insecure. This indicates that food insecurity was not too severe among the households. The result is in line with the findings of Ogunniyi *et al.* (2017) that most urban farmers in Ibadan, Oyo State were likely to be food secure.

Constraints to Homestead Agriculture

The constraints to homestead agriculture were analysed using factor analysis and the result is presented in Table 4. Based on items that clustered and loaded high, three (3) factors were identified and extracted, namely; institutional (Factor I), tenureship (Factor II) and economic (Factor III). These three therefore, represent the principal factors and constraints to homestead agriculture in Abakaliki metropolis. From the result, institutional factors constraining homestead agriculture in Abakaliki metropolis were: lack of access to water for all seasons production (0.796), lack of access to improved seeds and planting materials (0.881), non-inclusion into extension and advisory service (0.815), and lack of ready market (0.527). Tenureship factors which arose out of land hold system practice in the metropolis were: lack of access to suitable land

(0.787), lack of ownership and usage right (0.599), lack of security of tenure (0.616), and interference from environmental authority (0.459). Finally, specific economic factors hindering homestead agriculture in Abakaliki metropolis were: high cost of labour (0.856) and scarcity of labour (0.705).

Despite the multiplicity of benefits of homestead agriculture in Abakaliki metropolis, the inability of institutional bodies and agencies to meet up their obligations to urban farmers constrained homestead agriculture. In support of this, Mitchell and Hanstad (2004) averred that the inability of homestead farmers to access capital or credit, water, seeds and planting materials, labour and market, coupled with weak extension and advisory services constrain productivity and sustainability of urban agriculture. Homestead or backyard agriculture in urban areas was mainly seen as a temporary use of land until a time when open space would be incorporated into the city and developed for other uses (Bourque, 2000). Extant literature has also identified key tenureship constraints to the productivity and sustainability of homestead agriculture. For instance, Hoogerbrugge and Fresco (1993) and Mitchell and Hanstad (2004) in their separate studies, identified key constraints to homestead agriculture as lack of access to suitable and sufficient land to establish a homestead farm along with lack of ownership and usage rights of some form as the most important limiting factors. The cultural acceptance of homestead farming is also an important constraint. This finding is also in agreement with that of Ogunniyi *et al.* (2017) who reported that lack of security of tenure acts as a hindrance to homestead farming in urban areas due to the uncertainty in the length of land use.

Conclusion

Homestead agriculture contributed positively to the attainment of food security among urban households in Abakaliki metropolis. As a result the urban households consume balanced meals at breakfast, lunch and dinner. The study established that food, economic and nutritional securities influence urban households' participation in homestead agriculture. Despite the contributions of homestead agriculture to the attainment of food security, the urban farmers were still constrained by institutional, tenureship and economic factors. These constraints must be addressed headlong so as to accelerate the contributions of homestead agriculture to food security and nutritional advancement of urban households especially the poor households. Ebonyi State government should set aside farm estate and encourage residents to engage in urban agriculture through access to land in the estate at a minimal rentage. Extension organization must develop all

inclusive programmes that will enhance urban farmers' access to production inputs and advisory services. The Ministry of Water Resources should ensure all-year-round supply of water to assist homestead farmers to engage in all year round production.

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Table 1: Types and Categories of Homestead Agricultural Produce

Class of food	Description	Frequency (n=120)	Percentage
Food crop			
Vegetable	Ugu (<i>Teliferia occidental</i>)	105	87.5
	Spinach (green)	86	71.7
	Bitter leaf	79	65.8
	Scent leaf	27	22.5
	Water leaf	34	28.3
	Roots & tube	Cassava	80
Yam		65	54.2
Potatoes		3	2.5
Cereal	Rice	9	7.5
	Maize	73	60.8
Spice	Pepper	70	58.3
	Ginger	15	12.5
	Curry leaf	39	32.5
	Garlic	17	14.2
Livestock			
Poultry	Broiler	63	52.5
	Turkey	4	3.3
Fishery	Aquaculture	5	4.2
Small ruminant	Goat	3	2.5

Source: Field Survey, 2018

Table 2: Varimax Rotated Component Matrix on Factors enhancing Homestead Agriculture in Abakaliki Metropolis

Factors	Compt. I Food Security	Compt. II Economic Security	Compt. III Nutritional Security
Medicinal purposes	-0.754	0.068	0.152
Nutritional reasons	-0.097	0.153	0.941
It makes food available at all times	0.778	0.364	-0.086
Reduce expenses on food purchase	0.249	0.645	0.183
It Improve family health	0.283	-0.274	0.587
It provides additional income	0.167	0.614	0.283
Waste materials that serve as farm inputs	0.124	0.345	0.148
It preserve indigenous knowledge	-0.077	0.056	0.046
It provides condiments for quick food preparation	0.869	0.103	0.317

Source: Field Survey, 2018.

Table 3: Distribution of the Households According to Their Food Security Status

Food insecurity level	Frequency (n=120)	Percentage
Food secure	63	52.5
Food insecure	57	47.5
Food Insecurity Extent	Parameter	Value
Food insecurity incidence	($\alpha=0$)	0.254
Food insecurity Gap/Depth	($\alpha=1$)	0.123
Food insecurity severity	($\alpha=2$)	0.098

Source: Field Survey, 2018.

Table 4: Varimax Rotated Component Matrix on Constraints to Homestead Agriculture in Abakaliki Metropolis

Constraints	Component I Institutional Constraint	Component II Tenureship Constraint	Component III Economic Constraint
Lack of access to suitable sufficient land	0.231	0.787	0.268
Lack of ownership and usage right	-0.336	0.599	0.195
Lack of access to credit due to small size enterprise	-0.764	-0.171	0.145
Lack of access to water for all seasons production	0.796	0.096	-0.017
Lack of access to improve seeds and planting materials	0.881	0.027	-0.061
High cost of labour	-0.126	0.253	0.814
Scarcity of labour	-0.094	-0.122	0.705
Exclusion from extension and advisory services	0.815	0.208	0.112
Lack of ready market	0.527	-0.661	0.310
Lack of security tenure	-0.568	0.616	-0.050
Interference from environmental authority	-0.211	0.459	-0.247

Source: Field Survey, 2018.