THE POTENTIALS OF URBAN FARMING ON HOUSEHOLD FOOD CONSUMPTION IN ILORIN METROPOLIS, KWARA STATE

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ABSTRACT

Urban farming has been recognized globally as a sustainable livelihood strategy among urban and peri-urban poor in developing countries, significantly and positively impacting food security and nutrition. Specifically this study analyzed the potentials of urban farming household and household calorie intake per capita in the study area. The data for the study were collected using a well-structured questionnaire administered to 150 urban farming households in Ilorin metropolis of Kwara State, Nigeria. Urban farming household were selected using a Snow balling Techniques in the study area. The data collected were analyzed using descriptive statistics, household dietary diversity score, and poison regression model. The results revealed that the average calorie intake per capita consumption is 2840.46 kilocalorie /day/capita. Ordinary least Square (OLS) regression Model was used in analyzing the potentials of urban farming on Household dietary diversity and the results revealed that urban farm income, household size, dependency ratio and nutritional training were related at 1% to household dietary diversity score, while educational level was negatively significant at 1% to household dietary diversity in the study area. It can be concluded that urban farming had a positive effect on the households' consumption in the study area. This study therefore recommends measures such as enlightenment campaign for example to encourage the practice of urban farming and improve the welfare of farming households.

KEYWORDS: Potentials, Urban farming, Household food, Consumption

1. INTRODUCTION

Agriculture is an important tool for reducing the effects of household food consumption, food insecurity, unemployment and poverty which are major problems in urban areas in Nigeria. Shortage in food supply and increasing household demand continues to worsen in some urban areas of the country and many households resulted into urban farming as a means of coping. Food is perhaps the most important commodity linking rural producers and urban consumers (Rengasamy et al., 2003).

Urban farming has been recognized globally as a sustainable livelihood strategy among urban and peri-urban poor in developing countries which significantly and positively impacts food security and nutrition (Addo, 2010). The United Nations projected that by 2050, 66 percent of the world's population will be living in urban areas, with lower-middle-income countries urbanizing faster than the other regions (United Nations, 2014). Urban farming has been assumed to be of global concern and it has become a topic of scientific research in recent years. This is because the increasing growth of hunger in most parts of the world, especially in developing nations, has presented a huge challenge to governments.

Sub-Saharan Africa (SSA) has the highest rates of urbanization globally and more than half of its entire population will be living in cities during the next two decades (Adeyemo

et al. 2009). This situation implies that in SSA, especially Nigeria, the problem of urban poverty, unemployment and urban food insecurity will become exacerbated rather than ameliorated by the phenomenon. Urban farming is one of the positive activities urban residents in Nigeria undertake in an effort to take control of food security, social ills and environmental degradation in their communities. However, in times of harsh economic situations and periods of food insecurity, urban farming is often adopted as an important livelihood strategy for survival. It is estimated that about a fifth to a third of families in some cities are engaged in urban farming, and some do not have any other source of sustenance or income (Rees, 2009).

As many parts of the world are facing an ever-increasing challenge of urbanization, absolute and relative growth in urban poverty and food insecurity are becoming a challenge. Urban Farming is defined as growing or producing food in a city or heavily populated town or municipality such as backyards, on vacant public lands and in semi-public areas (Jongwe, 2014). It has become one of the main activities undertaken by urban residents to alleviate threatening poverty and to improve both food consumption rate and nutrition in their households. (Hadebe and Mpofu, 2013). A household refers to a small group of persons who share the same living accommodation, who pool some or all of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food.

There are many potential benefits of urban farming which are; employment creation and livelihood support, wastes and nutrients recycling, conservation of urban soil, water management; and reduction of global warming and atmospheric pollution (Deelstra and Girardet, 2000; Mougeot, 2001; Mkwambisi et al., 2011). While urban farming is constrained by a number of factors including, limited availability of land for farming, health risks, insufficient water for irrigation, inadequate governing policies, lack of ready markets for perishable produce, and limited storage facilities (Cofie, et al., 2005; Gyasi, et al., 2014), it is revealed to be an important source of food, income, and employment (Gyasi, et al., 2014).

However, urban farming would not be able to meet the demand for staple crops such as cereals and tubers, which can be easily stored and transported from rural areas with minimal losses. What must be recognized and appreciated is that, despite limited support, urban farming already provides a significant portion of food, especially perishable vegetables and poultry products to many cities. Given the foregoing, this study tends to investigate the potentials of urban farming on household food consumption in Ilorin metropoli**s,** of Kwara State.

1.2 Objectives of the Study

The broad objective of the study is to examine the potentials of urban farming on household food consumption in Ilorin metropoli**s,** of Kwara State, Nigeria. The specific objectives include:

1. To determine the amount of calorie intake of urban farming households in the study area.
2. To examine the effect of urban farming on household food consumption.

2. METHODOLOGY

The study was carried out in Ilorin metropolis in Kwara State, Nigeria. Ilorin, the capital city of Kwara State, it is located on long 2^{0}6E and 5^{0}2E and latitude 7^{0} 130'N and 9^{0} 40N. Kwara States shares boundary with republic of Benin

and with five states in Nigeria. In the North, it is bounded by Niger State, in the south by Oyo, Osun, Ekiti states and in the east by Kogi State. Kwara is referred to as the gate way between the Northern and the southern part of Nigeria. It comprises of 16 Local Government Area, Yoruba, Fulani, baruba and Nupe are the major Ethnic group in the State. According to Nigeria Galleria, (2015). Kwara State occupies 36.825 Sqkm. In terms population, Kwara state was 2.37 (NPC) as at 2006 population Census. They are wet and dry seasons. The rainy season begins towards the end of April and last till October while the dry season begins in November and ends in April. The study was carried out in three (3) Local Government areas namely; Ilorin East, Ilorin South and Ilorin West.

2.1 Sampling Selection and Sample Size

A three-stage sampling techniques was used for this study. The first stage involved the purposive selection of the three (3) Local Government Areas (Ilorin East, Ilorin West and Ilorin South) in Ilorin metropolis. These Local Governments were selected because of the prevalence of urban farming activities in the area. The second stage involved a snowball sampling which was used to select fifty (50) urban farmers from each local government since the list of urban farmers are not known.

Table 1 show the list of communities visited and total numbers of questionnaires collected from each community.

Table 1. Selection of Respondents for Data Collection

S/N	LGA	Name of Communities	Number of respondents
1	Ilorin West	Kuntu	8
2	Ilorin West	Oko-Erin	8
3	Ilorin West	Osere	8
4	Ilorin West	Babaoko	8
5	Ilorin West	BabaOde	8
6	Ilorin West	Aliara	10
7	Ilorin East	Kulende	18
8	Ilorin East	Akerebiata	16
9	Ilorin East	Odo Oyun	16
10	Ilorin South	Tanke	12
11	Ilorin South	Agbabiaka	13
12	Ilorin South	Akanbi	12
13	Ilorin South	Opolo	13

Source: Field Survey (2020)

2.2 Analytical Techniques

This study employed a number of analytical tools based on the objectives of the study. The tools included: descriptive statistics, Household calorie Intake per capita and multiple regression using Poisson regression model. Descriptive statistics such as mean, median, mode frequency distributions were used.

2.3 Household calorie Intake per capita

Calorie per capita intake was used to calculate the household food consumption. This was calculated by collecting data on food consumption at the household level. Quantities of food consumed include food from own production, market purchases, and out-of-home meals and snacks excluding food consumed during seasonal period. A 7-day recall will be employed in this survey for easy recall. Food quantities consumed at the household level will be converted to calories using the locally available food composition table. Resulting calorie values will be divided by the number of Adult Equivalent (AE) in a household, in order to obtain the per capita calorie intake. This will further be divided by the 7-days recall period to obtain per capita daily calorie intake of each household.

2.4 Multiple Regression Model for determinants of Calorie intake per capitaL

Multiple regression models was used to analyze the potentials of urban farming on household food consumption. The model is stated as follows;

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + \mu_t$$

Where

Y= Household calorie intake per capita (kcal)

b_0 = Constant

$b_{1\_}b_{10=}$ co efficient of explanatory variables

X_1 = total grain equivalent from urban farming

X_2 = Gender of household head (Male =1, Female = 0)

X_3 = Age of household head (Years)

X_4 = Educational level of household head (No of years spent in school)

X_5 = Household size (Number of individuals)

X_6 = Farm size (Hectare)

X_7 = Dependency ratio (%)

X_8 =Urban farm income (Naira)

X_9 = Urban farming experience of household heads (Years)

U_t = Error term

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of the Farmers

This section represents an analysis on the data collected during the field survey on the relevance of socio-economic profile of the respondents.

Table 2. Socio-economic Characteristics of the Respondents (N = 150)

Variables	Category	Frequency	Percentage	Mean
Gender	Male	77	51.3	
	Female	73	48.7	
Age (years)	. . .	12	8.0	50.45
	. . . . .	53	35.3	
	. . . . .	55	36.7	
	. . . . .	22	14.7	
	. . .	8	5.3	
Marital status	Married	96	64.0	
	Single	28	18.6	
	Divorced	6	4.0	
	Separated	7	4.6	
	Widowed	13	8.6	
Household size	≤5	32	21.3	6.79
	6 – 9	59	39.3	
	10 – 13	39	26	
	14 – 27	12	8.0	
	>18	8	5.3	
Educational level	No formal	26	17.3	
	Primary	16	10.7	
	Secondary	64	42.7	
	Tertiary	44	2.3	
Farm size (acre)	≤0.5	131	87.3	1.97
	1.0	16	10.7	
	2.0	2	1.9	
Total Output (kg)	<500	50	33.3	1,254
	501 -1000	60	40	
	1001 -2000	32	21.3	
	2001 -3000	8	5.33	
Farm experience	≤20	50	33.3	28.52
	21 – 33	44	29.3	
	34 – 45	25	16.6	
	46 – 58	21	14.0	
	>59	10	6.6	
Farmers association	Yes	30	20.0	
	No	120	80.0	
Access to credit	Yes	70	46.6	
	No	80	53.3	
Urban Farm Income (Naira)	<2,000	46	30.7	
	2,001 -40,000	86	57.3	
	40,001 -60,000	17	11.3	
	60,001 and above	1	0.7	

Source: Field Survey (2020)

Table 2 shows the distribution of the respondents in terms of socio economic characteristics. The results show that 51% of urban crop farmers are male while only 48% are female. The result above shows that majority of the urban farmers at Ilorin metropolis are male. The results disagree with Hadebe and Mpofu (2013), who stated that women are mainly involved in urban agriculture. It also reveals that majority of the sampled respondents are between the ages of 31 and 55 years in all categories of urban farmers. The mean age of urban farming household heads stood at 51 years, implying that the majority of the respondents were still at their active working age. The implication is that, at this age an individual will be willing to adopt innovations that improve his/her productivity. The results support Dercon and Krishnan (2000), who claims that at the active working age, household heads adopt innovations that positively affect their productivity and income.

The distribution of the marital status of household heads in the study area shows that 64.0% of farmers are married while others are single, divorced, widowed or separated. Households where the respondents are married and both the spouses are working are expected to be more food secure than households with single, widowed, divorced or separated individuals. It is widely believed that the size of a household affects its food expenditure and consumption pattern, hence its food security status. Table 2 show that 39.3% and 21.3% of urban farmers respectively have less than 5 and 6 – 9 individuals in their household respectively. The mean age of urban farming household size stood at 6.79, implying that the older household size tends to reduce per capita food expenditure of the households thus increasing their likelihood of being food insecure.

The level of the formal education of a household head is an important factor to improved farm production and management techniques. The educational status of an individual in the household plays an important role in his or her income earning capacity and food expenditure. The results revealed that the level of education attained by respondents was expected to have a positive influence on their economic activities outside their primary occupation whereas the level of literacy among farmers in the study area is measured by ability to read or write. It was found that only 17.3% of farmers have no formal education. About 10.7, 42.7% and 2.3% have primary, secondary and post-secondary education level respectively. The mean average farm size was found to be 2 acres while the average total grain obtain from farm was found to be 1,254.61kg. It is expected that with increasing or high total output, farming households will have more access to food.

4.2 Determinants of Calorie Intake of the Urban Farming Household

Table 3: Household calorie intake per capital

Food Items in Kcal	Mean	St. Deviation	Coef.of Variation	Range
Meat	248.74	203.21	0.817	0-2082.19
Cereals	1386.7	617.25	0.445	547.24-4617.22
Legumes, nuts and seeds	460.59	389.34	0.845	0.2817-67
Vegetables	33.51	55.96	1.670	4.63-555.43
Fruits	0.96	1.82	1.896	0-9.30
Fat and Oil	424.11	171.26	0.404	0-1279.00
White tubers and roots	178.18	181.49	1.019	0-1325.75
Egg and Milk	43.72	72.36	1.655	0-598.36
Fish and other sea foods	49.21	44.2	0.898	0-266.87
Beverages	13.43	34.36	2.559	0-191.89
Spices and Condiments	1.33	0.66	0.496	0.10-5.07
Total Calorie per capita	2840.46	1168.89	0.412	1379.06-3944.03

Source: Field Survey (2020)

Following the identification and aggregation procedure, the daily per capita consumption pattern results were computed. The result as presented in Table 3 shows that Calories from cereals products form the bulk of the food consumed by the households. The average daily calorie value for cereals was found to be 1386.7kcal per capita, followed by legumes at 460.59 kcal per head per day. Fat and oil products closely followed with 424.11 kcal while Root and tubers food products were found to have 178.18mkcal. These groups of food products comprise the bulk of calorie intake of the farm households and except for the leguminous food products, the bulk of the calorie intake as shown from the result are starchy foods. It is to be noted further that the coefficient of variation of leguminous food consumed is high, close to 1, at 0.845 but those of cereals and fat and oil were observed to be low (0.445 and 0.404 respectively). This suggests that there is a high variation in the consumption of legumes among the sampled population. The result further shows that daily calorie intake per capita from proteinous food products were very low and the coefficient of variation, which essentially provides a measure of variation that is corrected for the size of mean, were found to be high, suggesting the inappropriateness of the average to represent the population. Average daily calorie intake from meat products was found to be 178.18kcal (1.019 coefficient of variation), fish products had 49.21 kcal (0.898) while other animal protein sources like eggs and milk products was observed to be 43.72 kcal (1.655) per capita per day. Fruits and vegetables proportions of the average daily calorie intake were equally observed to be low at 0.96 kcal and 33.51 kcal, respectively. More worrisome is however, the observation that, even at this low daily per capita proportion level, the measure of variation in consumption within the population were observed to be very high. The coefficient of variation for fruits calorie intake was found to be 1.896 while that of vegetable products daily intake, 1.670. The quantity and quality of calorie intake is important as it has been noted that a short fall in quality lead to malnutrition.

Table 4: OLS Regression Estimate of Effect of Urban Farming on Household calorie Consumption

Variables	Coefficient	Standard error	Z value	p>[t]
Constant	1.450	0.8684	2.788	0.095
Total output	0.460764***	0.0622	7.4075	0.000
Gender	-0.451	0.369	1.221	0.222
Age	-0.031**	0.014	2.255	0.024
Household size	-0.503***	0.2628	3.666	0.056
Education	0.023	0.047	1.622	0.109
Urban Farming experience	0.032	0.0255	1.591	0.207
Farm size	0.141***	0.026	3.544	0.000
Off farm income	0.835	0.3731	1.006	0.225
Household asset	-0.027	0.0476	0.313	0.576
Dependency ratio	-0.102**	0.041	-2.509	0.012
Urban farm income	0.118***	0.032	3.481	0.022

Note: ***, ** and * = Figures significant at 10%, 5% and 1% significant levels respectively
Source: Field Survey (2020)

Table 4 shows the regression analysis of impact of urban farming on household food consumption. The chi-square of 12.164 obtained in the study implies that the parameters included in the logistic model are significantly different from zero at the 1% significant level. The Pseudo R^2 of 0.177 obtained in the study indicates that the independent variables in the model explained 17.7% of the total variation in household food consumption of the farmers. Moreover, the likelihood function of the model was significant (Wald = -27.39237, with $p < 0.0000$) showing strong explanatory power of impact of urban farming on household food consumption in the model.

Effect of urban farming on household calorie consumption is presented in Table 4. Table 8 shows the results of the factors that affect urban farmers' household calorie consumption in the study area. The results show that pseudo R2 is 0.17 and it is significant at 1%. Out of the 10 explanatory variables included in the model, 5 were found to significantly influence the probability of urban farmer's household food consumption. These are age, household size, farm size and dependency ratio. Age of urban farmers significantly affected household food consumption. The age of the urban farmer tends to increase the probability of urban farmers household food consumption by 0.024%. In the case of household size, the greater the number of persons in household, the more the hands can be used as family labour. An additional number of persons in urban farming households decreased the probability of household food consumption by 0.6%. Availability of farm labour at sometimes tends to decrease household food consumption. The implication is that these individuals are not readily available for farm work and cannot be employed in other non-farming activities that can increase the income of the urban farm family. The result shows that the household size significantly affects household food consumption by -50.3% which is negative and statistically significant at 5%. Owing to the fact that the average farm size was found to be 1.98 hectares (low) and a high average household size of 6.8, increasing sale of farm produce to earn more income could actually decrease the stock left for household food consumption. Due to limited farm size, increasing farming activities on the urban farm may reduce productivity and food supply leading to food shortage. This will drastically affect household food consumption at a significant level. The result shows that dependency ratio is negatively significantly and affects household food consumption by -10.2%. This indicate that the higher the dependency ratio, the higher their food consumption. This will drastically reduce food productivity and nutritional status of the urban farmers. The significant result of age, household size, farm size and dependency ratio is similar to the study on the determinants of daily calorie intake among rural and urban low-income households in Edo state, south-west, Nigeria by Orewa and Iyangbe (2009), and Babatunde *et al;* (2010). This is probably because the capacity to access sufficient calories declines with age and older people probably depends on the active population for adequate nutrition intake.

The result presented in Table 4 shows total output obtain from urban farming was found to be highly significant at 1% level. The total crop output is positive and statistically significant. This shows that the more output obtain from urban farming leads to an increase in the household calorie intake. This implied that as age of respondent increases the lower the food consumption/par calorie intake and vice versa. The age of the household measured in years and dependency ratio was also found to be significant at 5% level, while the household size was also found to be

significant at 10% level. It was observed that the total crop output, farm size, age of household headcount, dependency ratio and household size were the major determinants of household calorie consumption among urban farmers in Ilorin metropolis.

4. CONCLUSION AND RECOMMENDATIONS

Despite the fact that urban farming has the proven capacity to contribute to food security and income generation, it faces a number of constraints that impede the achievement of these goals. The environmental and human health challenges associated with urban agriculture show that at the current level of practice, the sustainability of urban agriculture is highly compromised.

The success and expansion of urban agriculture will therefore depend on the ability of policy makers, administrators and urban farmers to use integrated social, economic and environmental strategies that effectively address household food consumption, nutrition, food security and urban poverty. Although sustainable urban agriculture is not a panacea to economic decline or poverty alleviation, it is a positive and appropriate way of improving urban livelihoods.

Based on our strong empirical evidences, we therefore suggest that policy interventions should include measures that get farmers increase their level of education, enlighten them about family planning and the provision of nutrition education among rural farming household should be accorded the necessary priority. By the positive influence of total crop output (production), all factors that could lead to increasing production and productivity should also be pursued.

To this end, the following are recommended to ensure that these policies, schemes and programmes of the government succeed: Firstly, the local government is advised to allow establishment of farmers' networks and cooperative union by the smallholder farmers own freewill in a way it promote their human agency rather than the current top-down approaches. The management of these cooperatives unions needs to be accountable to the smallholder farmers so that they can ensure that unions are really serving the interest of the farmers. We also suggest that policy interventions should include measures that get farmers increase their level of education, enlighten them about family planning and the provision of nutrition education among urban farming household should be accorded the necessary priority. By the positive influence of total crop output (production), all factors that could lead to increasing production and productivity should also be pursued.

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