Strengthening Food Security through Peri-Urban Agriculture in Ibadan, Nigeria

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Abstract

This study examined the practices of peri-urban agriculture (PUA) in Ibadan by identifying its prevailing opportunities, challenges and farmers' perception of its prospects for enhancing food availability in the city. Primary data were collected through personal observations, key informant interviews and the administration of a structured questionnaire to 230 randomly selected farmers in the six peri-urban local government areas (LGAs) in Ibadan. Descriptive statistics were used to summarize the data while Chi-Square analysis was used to test the hypotheses of the study. Findings revealed that the peri-urban farmers enjoyed opportunities such as abundance of land for farming(47.4%); good soil suitable for farming (32.2%); nearness to market (8.7%); good roads to market (6.9%) and water availability (4.8%). The major challenges of the peri-urban farmers were inadequate finance (43%), farm encroachment by urban development (15.7%), erosion and flooding (13.5%), long distance to farm (13.0%), scarcity of labour (8.7%), and poor access to land (1.8%).The study concluded that opportunities for PUA abound in Ibadan and can be used to strengthen food security. To ensure sustainability of PUA in the city, the government is called upon to provide farmers with financial assistance to enhance their productivity, enforce development control regulations to halt encroachment on farm lands, prohibit development in floodplains, and establish additional farm settlements.

Keywords: food security, peri-urban agriculture, opportunities, challenges, Ibadan

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Introduction

Food is one of the basic needs of man. Adequate food intake, in terms of quantity and quality, is key to a healthy and productive life (Omonona *et al*., 2007). Nigeria is bestowed with fertile soil sufficient to produce food to carter for her ever-increasing population, but this natural endowment is not well harnessed for the benefit of the people; hence, food insufficiency has persisted. The food situation in the country remains poor, according to Uma *et al*. (2014), as supply has been unable to match demand and less attention is given to agriculture in spite of the fertile land with which nature has endowed the country.

To improve the food situation in Nigeria, it is estimated that the annual food supply will have to increase at an average annual rate of 5.9 percent to meet demand and to significantly reduce food importation (Federal Ministry of Agriculture, 1993 cited in Amaza *et al*., 2006: 139). Over a decade ago, it was reported that the production of food in Nigeria had not increased at the rate that could meet the needs of the ever-increasing population. While food production increased at the rate of 2.5 percent, food demand increased at the rate of more than 3.5 percent owing to the high rate of population growth of 2.83 percent (CBN, 2004).

The reality is that Nigeria has not been able to attain self-sufficiency in food production, despite the increasing land area put into the activity annually. The constraints to the rapid growth of food production seem to be mainly those of low crop yields and resource use efficiency, and they can be attributed to inefficient farm management and inadequate finance (Ambali *et al*., 2012). Currently, the production of food in Nigeria, with an index of 114.93 as at 2013, has not increased at the rate that can meet the demand of the increasing population (Ojo, 2003; The World Bank Group, 2016).

The resultant effect of these problems is that most of the people in the country do not have enough food to subsist on, all the year round. They are, therefore, closely identified with poverty and food insecurity. Food insecurity exists when people lack sustainable physical or economic access to enough safe, nutritious, and socially acceptable food for a healthy and productive life. This may be chronic, seasonal, or temporary (FAO, 2003).

In order to redress the food deficit problem, some individuals in the urban areas engage in food production using available lands in the peri-urban areas. A good understanding of the state of food production through Peri-Urban Agriculture (PUA) will help urban planners to reflect on how to prevent the usual conflict between urban demand and supply to strengthen food security. In order to combat threats of food crisis and ensure food security for the population in Nigerian cities, there is the need to support and strengthen urban and peri-urban agriculture. Peri-urban areas have more land for agricultural activities than the cities. In view of the foregoing, this study examined the practices of PUA in Ibadan by identifying its potential, prevailing opportunities and challenges, with the aim of strengthening it to improve on food availability in the city. Based on the contributions and prospects identified, the study put forward practicable recommendations for strengthening PUA in Ibadan.

Conceptual Discussions and Literature Review

Food Security and its Dimensions

The concept of food security really came to the forefront in the 1970's, and it was at the 1974 World Food Conference in Rome that the first explicit acknowledgement was made: that food security is an international issue, and that it concerns all mankind (FAO, 2008; Napoli, 2011). Food security was defined in 1974 by the World Food Summit as the "availability at all times of adequate world food supplies of basic food stuffs—to sustain a steady expansion of food consumption—and to offset fluctuations in production and prices" (United Nations, 1975, cited in FAO, 2003: 26). This definition was expanded in 1996 at the World Food Summit thus: ''food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996; FAO, 2003: 28). Since then, the definition of food security has evolved and diversified to accommodate the different approaches to and contexts to the problem (Napoli, 2011).

The definition of food security adopted by this study is the most recent one by the FAO, which takes into consideration the diverse and unique situations of people around the world. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2016).

FAO (2008) describes four dimensions of food security – availability, access, utilization and stability (Table 1). Availability is achieved if adequate food is ready at people's disposal, while access is ensured when all households and all individuals within those households have sufficient resources to obtain appropriate foods (either through production, purchase or donation) for a nutritious diet. Adequate utilization refers to the ability of the human body to ingest and metabolize food. Nutritious and safe diets provide an adequate biological and social environment and proper health care which can help to avoid diseases and ensure adequate utilization of food.

Table 1: Dimensions of Food Security

Physical availability of food	This refers to the presence of physically sufficient quantities of appropriate food. The food may come from domestic production, commercial imports or food assistance. Food availability addresses the "supply side" of food and is determined by the level of food production, stock levels and net trade.
Economic and physical access to food	This focuses on the income or other resources needed to obtain sufficient and appropriate food through home production, buying, barter, gathering, etc. The main focus here is on the economic access of households to food. Food may be available but not accessible to people who do not have adequate land to cultivate or enough money to buy it. Thus, an adequate supply of food at the local, national or international levels does not in itself guarantee household level food security.
Food Utilisation	This ensures that food is properly used through appropriate food processing and storage practices, adequate knowledge and application of nutrition, and adequate health and sanitation services. Utilization is understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals is the result of good care and feeding practices, food preparation, diversity of the diet and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals.
Food Stability (stability of the other three dimensions overtime).	Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on food stability.

Source: FAO, Food security information for action 2008

Urban Agriculture (UA), Peri-Urban Agriculture (PUA) and Food Security

Urban Agriculture (UA) is an activity that produces, processes and markets food and other products on land and water in urban and peri-urban areas, applying intensive production methods and (re)using natural resources and urban wastes, to yield a diversity of crops and livestock (United Nations Development Programme (UNDP), 1996)). Urban agriculture is also regarded as "an industry that produces, processes, and markets food, fuel, and other outputs, largely in response to the daily demand of consumers within a town, city, or metropolis" (Mougeot, 1999:10). Owing to the increasing urban population and intense pressure on urban land for other space-demanding uses (commercial, residential, industrial and institutional), urban farmers are moving to the peri-urban areas to source land for agriculture.

Peri-urban agriculture (PUA) refers to "any form of agricultural activities closer to town, at or outside the boundary of a city that operate intensive semi or fully commercial farms to grow vegetables and other horticulture, raise chickens and other livestock, and produce milk and eggs" (FAO, 2001: 9). Peri-urban agriculture embraces fish farming, horticulture, forestry and livestock farming. Currently in Ibadan city, urban and peri-urban agriculture are being practiced. Urban and peri-urban agriculture are activities

covering the growing of plants and the raising of animals for food and other uses, as well as the production and delivery of inputs and the processing and marketing of products within and around towns and cities (RUAF, 2016).

In recent times, PUA and related activities have gained importance, especially in developing economies, as a dimension of urbanization worldwide and as a means to alleviate poverty and improve diets in urban and peri-urban areas (Lwasa *et al*., 2013). It is considered to be a viable intervention strategy for the urban poor to earn extra income while growing their own food. It enables urban households in major cities of developing countries (Hill *et al*., 2007) to manage poverty by providing them adequate food, proper nutrition and dietary quality, which are important aspects of household food security and livelihood strategies (May & Rogerson, 1995; RAUF, 2010).

The benefits from the sale of agricultural products and reduced household expenditure on food constitute an important impact of PUA on local food security (Lwasa *et al*., 2013).Peri-urban agriculture is assumed to create an ''opportunity cost'' – domestic producers can either save income, via the consumption of home-produced foodstuffs that are cheaper to produce than to buy from the market, and/or increase income by selling or trading their products.

Methodology

Study Area

Ibadan is the capital city of Oyo State, the third largest metropolitan area, by population, in Nigeria, after Lagos and Kano, with a population of 2,550,593, according to the 2006 census (National Population Commission, NPC, 2006). The city was created in 1829 as a war camp for warriors coming from Oyo, Ife and Ijebu. It is located approximately on longitude $3^{o}5'$ to $4^{o}36'$ east of the Greenwich Meridian, and latitude $7^{o}23'$ to $7^{o}55'$ north of the Equator, at a distance of 145 km north of Lagos (Ayeni, 1994). The city covers a total of 3,123.30km^2. The map of Ibadan, within the context of Nigeria and Oyo State, is presented in Figure 1. The Ibadan metropolitan area is made up of eleven (11) local government areas (LGAs). Five (5) of these constitute the urban local government, namely: Ibadan North, Ibadan North East, Ibadan North West, Ibadan South East and Ibadan South West. The remaining six (6) LGAs, namely Akinyele, Egbeda, Ido, Lagelu, Oluyole and Ona-Ara, are rural. The city is drained by three important rivers- River Ogunpa, River Ona and River Ogbere. The economic activities in the city include agriculture, commerce, handicraft, manufacturing, and service industries. Although the city's farming population has declined, agricultural activities have remained important in Ibadan. Agriculture is practised in the form of subsistence farming, commercial farming and settlement farming (Odewumi *et al*., 2013).

Data and Data Sources

The data for this study were elicited from both primary and secondary sources. The secondary data used included the total number of registered farmers within Ibadan, obtained from the Oyo State Agricultural Development Programme (OYSADEP), and published journal articles. The primary data were sourced mainly through direct field survey and investigations. The main instrument used for the collection of the primary data was a structured questionnaire administered to farmers in the study area. This questionnaire was used to collect information on the location and size of farms, mode of ownership of farmland, type

of farming systems, types of crops cultivated and years of practice, and prospects and challenges facing agricultural activities in the study area, amongst others. A total of 230 farmers, who constituted 1.5% of the registered farmers in Oluyole, Ona-ara, Ido, Akinyele, Egbeda and Lagelu LGAs, were randomly selected for questionnaire administration. The questionnaire was administered with the permission and assistance of the agricultural extension agents in the local government areas. The data collected were analyzed using Statistical Package for Social Science (SPSS).The results were presented in tables and percentages.

Results and Discussions

Socio-economic Characteristics of Sampled Farmers

In the Ibadan peri-urban areas, agriculture was practised by 71.3% men and 28.7% women (Table 2). This is consistent with an earlier study by RAUF (2010), where males were the predominant gender involved in agriculture in Ibadan. Farming was dominated by adults (57.3%) aged 31-50, and the aged/retirees (34.8%), that is,51 years and above. About 71.7% of the farmers were married. This result is not much different from the observations by RAUF (2010) in Ibadan, that 91% of the farmers were married. It is believed that married people have children, who have families that can assist them with the farm work, especially when and where farm labourers are not available.

The majority (80%) of the farmers had secondary occupations to augment farming activity and earned additional income as traders (33.5%), government workers (13.9%), artisans (13.0%), and clergymen (5.7%). Only one-fifth (20%) of the farmers practised solely farming. This result also agrees with Odewumi et al. (2013), where 60% were full-time farmers and those on part-time were engaged in trading (24%), the military (8%) and the civil service (4%). This shows that farmers in Ibadan engage in other activities to augment income from farming.

Over half of the sampled farmers (58.7%) farmed and lived within the peri-urban areas owing to their ownership of land, while 30.0% purchased the land, 28.3% rented land and 6.5% were allocated farmland by the government under farm settlement schemes in the LGAs. The study also revealed that more than half (54.4%) of the farmers had been farming in peri-urban areas for 10 years and above. This confirms RAUF's (2010) observation that farming in peri-urban areas of Ibadan has been a long-time activity for the people and that they have a lot of experience on farming challenges in the areas.

The data presented in Table 2 show that about 37.2% of the farmers had 1-3 hectares of land, while 32.2% of them had farmland of 4-6 hectares. Only 30.2% of the farmers had large farms of 7 hectares and above. The farmers practiced mixed cultivation (42.6%), shifting cultivation (41.3%), mechanized farming (12.2%) and mono-cropping (3.9%). The reasons for the choice of farming system included land availability (61.3%), scarcity of land (9.6%), available capital (9.1%), size of man-power needed (8.3%), type of equipment required (4.3%), water scarcity (3.9%), and personal interest (3.5%). The technique used in cultivation and harvesting was predominantly manual (68.3%); few farmers (10.4%) engaged in mechanized farming.

The survey of crops grown by the farmers revealed a wide range of arable crops such as cassava, maize, yam, beans, millet and soya beans (35.6%), vegetables (9.1%), and cash crops (5.2%). Fruits such as water melon, orange, pineapple and pawpaw; and cash crops like teak, kolanut, palm, rice, moringa, and cowpea, were also grown in the areas.

On the income of farmers, one-third (34.3%) of them earned less than ₦20,000 monthly; 48.4% earned between ₦21,000 and ₦60,000; and 9.5% earned the highest income of ₦81,000 and above.

Table 2: Socio-economic Characteristics of the Farmers

Characteristics	Respondents	Percentage(%)
Sex		
Male	164	71.3
Female	66	28.7
Total	230	100.0
Age		
Below 30yrs	18	7.8
31-40yrs	33	14.4
41-50yrs	99	43.0
51-60yrs	46	20.0
Above 60yrs	34	14.8
Total	230	100.0
Marital Status		
Single	23	10.0
Married	165	71.7
Divorced	19	8.3
Widowed	23	10.0
Total	230	100.0
Educational Status		
No Formal Education	33	14.3
Adult Education	17	7.4
Primary Education	44	19.1
Secondary Education	99	43.0
Tertiary Education	37	16.2
Total	230	100.0
Size of Farmland		
1-3hectares	86	37.4
4-6 hectares	74	32.2
7-9 hectares	19	8.2
10 and above	51	22.2
Total	230	100.0
Monthly Income		
Less than ₦20,000	79	34.3
₦21,000-₦40,000	85	37.0
₦41,000-₦60,000	26	11.4
₦61,000-₦80,000	18	7.8
Above ₦81,000	22	9.5
Total	230	100.0

Source: Authors' Field Data 2014

Potential of Peri-urban Agriculture (PUA)in Ibadan

The potential of PUA also refers to gains from the practice of peri-urban agricultural in Ibadan. However, these gains can change from being opportunities to becoming challenges if they are not available to the farmers in these areas. The most important opportunities enjoyed by individual farmers included availability of land, accessibility to water, short distance to market, and suitable fertile soils (Table 3). Results from the study showed that 47.4% of the farmers enjoyed abundance of land for farming. This encouraged them to engage in farming, as it was used to supplement their income.

Table 3: Main Opportunities Enjoyed by Peri-urban Farmers

Main Opportunities	Local Government Areas						No. of	%
	Akinyele	Egbeda	Ido	Lagelu	Oluyole	Ona Ara	Respondent	
Abundance of land	28	16	26	19	7	13	109	47.4
Good soil	14	13	5	16	12	14	74	32.2
Nearness to market	5	4	0	0	9	2	20	8.7
Good roads to market	5	0	1	0	4	6	16	6.9
Water Availability	3	2	3	0	3	0	11	4.8
Total	55	35	35	35	35	35	230	100.0

Source: Authors' Field Data 2014

Good Soil

From the result in Table 3, 32.2% of the farmers enjoyed good soil that is suitable for farming. When asked whether they added fertilizer to their soil, they responded that owing to the good nature of their soil, only 21.3% of them used local manure during cultivation to increase their farm productivity; 9.1% claimed they used both local manure and chemical fertilizers during cultivation; while 7% of them did not use either of the two types of agricultural enhancers. This shows that some of the farmers in Ibadan knew well how to enhance the productivity of their farms. The farmers found the local manure or compost more beneficial to them because, as they claimed, it helped to supplement the necessary nutrients absent in the soil.

Water Availability

In the Ibadan peri-urban areas, only a small percentage (4.8%) of the sampled farmers had access to constant water supply. About 37.4% and 32.2% of the farmers relied on rivers/streams and wells respectively, as major sources of water, in conjunction with rain, for their peri-urban agriculture. About 21.7% of the farmers relied only on rain water through rain harvesting and 8.7% made use of water from farm boreholes and rain (Table 4).

Table 4: Sources of Water for Farming Activity

Sources	No of Respondents	%
Rain and river/streams	86	37.4
Rain and nearby well or well on the farm	74	32.2
Rain only	50	21.7
Rain and farm borehole	20	8.7
Total	230	100.0

Source: Authors' Field Data 2014

Proximity of Farms to Market

The farmers enjoyed market proximity where they market their produce either through direct sale to consumers on the farm or to market women and others at the market. About 8.7% of the farmers claimed they sold their produce themselves to market women who then retailed it. This result ties in with a similar observation by Magnusson and Bergman (2014), that PUA, by its proximity to local markets, has a competitive advantage over produce from more remote locations. This, according to the farmers, maximized their profit.

Access to Land

The size of plots cultivated by the farmers ranged from 1 to 10 hectares. About 37.4% of the farmers had farm plots between 1 and 3 hectares, 40.4% had between 4 and 9 hectares, while 22.2% had 10 hectares and above (Table 2). This implies that if the present size of farmlands is increased, there will be more food available to feed Ibadan's increasing population. In accessing cultivable land, 27.8% and 30.0% of the farmers owned the land through inheritance and personal purchase, respectively; 28.3% of the farmers rented the land used for farming. The farmers who rented land for farming paid between ₦2000 and ₦2500 per 0.4 hectare (one acre) per annum to land owners in the remote parts of the LGAs, while farmers closer to the city paid between ₦4500 and ₦5000 per 0.4 hectare per year. About 6.5% of them obtained the farmlands through government land allocation based on farm settlement schemes in the local government areas (Table 5). Examples are the Ijeja Farm Settlement in Akinyele LGA and the Akufo Farm Settlement in Ido LGA.

Table 5: Nature of Access to Farmland

S/No.	Access to Land	No. of Respondents	%	Rent Paid
1.	Purchase	69	30.0	Outright Purchase
2.	Rented	65	28.3	a)₦2000-₦2500 for 0.4ha (in remote parts); b) ₦4000-₦5000 for 0.4ha (in areas closer to the city)
3.	Inheritance	64	27.8	Nil
4.	Government allocation	15	6.5	Nil
5.	Use of vacant land	13	5.7	Nil
6.	Gift	4	1.7	None
	Total	230	100.0	

Source: Authors' Field Data 2014

Challenges and limitations of PUA in Ibadan

The extent to which PUA is successful, particularly in enhancing food availability in Ibadan, largely depends on how it is perceived by city officials and how well integrated it is into other urban polices, especially in city planning. Many of the challenges surrounding the practice of PUA stems from concerns about inadequacies in physical planning. The main challenges aggregated from farmers in the six local government areas are presented in Table 6 and discussed in the following paragraphs.

Inadequate finance

Inadequate finance is the leading challenge confronting the farmers. About 43% of them experienced the challenge of inadequate finance. The farmers asserted that the reason for low productivity and "wretchedness" associated with the farming activity was the lack of financial incentives or assistance in bearing or subsidizing the high costs of needed inputs like insecticides, farm implements and water.

Urban sprawl

Urban sprawl through farm encroachment is the second serious challenge identified by the farmers in Ibadan. About 15.7% of the farmers identified farm encroachment by urban development as a challenge facing them. The increasing urbanization and sub-urbanization may explain the reasons for the increasing relocation of farms, which in turn increases the distance between farmers' residence and their farmlands and increased costs of production. The findings of Ramsey and Danielle (2011) suggest that population increases and consequent urban sprawl result in a decrease in peri-urban agriculture, specifically for several core food groups, including fruits, bread and grain-based foods. In doing so, access to or availability of these foods may be limited, and their costs are likely to increase, which may compromise food security for certain sub-groups of the population.

Distance between farmers' residence and farmlands

About 13.0% of the farmers identified long distances between their residence and farm lands as one of the challenges facing them. They claimed they incurred high transportation cost which impacted negatively on their farming revenue. A respondent, Mr. Joseph, who farmed in Akinyele LGA, said in an interview:

> I spend ₦500 daily to ride *okada* (commercial motorcycle) to and from my house in Moniya to my farm at Alabata. Some days, I don't go to farm when I do not have transport money.

Scarcity of labour

Labour is an essential component of agricultural productivity because of the intensive nature of the manual activities involved and because a single farmer may not be able to provide all the needed labour, especially where the farm size is relatively large. In all, 8.7% of the farmers complained bitterly about the inadequacy of labour to help in land preparation and weeding. Half (50 %) of the sampled farmers utilized family labour and another 8.3% used paid/hired labour on their farms. The hired labour was however costly, difficult to find and very unstable.

Erosion and flooding

About 13.5% of the farmers reported that their farmlands were affected by erosion from rain run-off, which most times washed away ridges and planted seeds.

Stealing of farm produce- Pilferage

As seen in the analysis, 4.3% of the farmers complained bitterly about the intrusion of strange people on their farmlands, who stole from their expected harvest, thereby causing a shortage in their expected income.

Poor access to land

About 1.8% of the farmers in Akinyele LGA complained of poor access to cultivable land for their farming activities.

Table 6: Challenges Facing Farming Activities

Challenges	Local Government Areas						No. of Respondent	%
	Akinyele	Egbeda	Ido	Lagelu	Oluyole	Ona-Ara		
Inadequate finance	7	10	22	17	14	29	99	43.0
Urban sprawl	10	6	7	5	8	0	36	15.7
Erosion and flooding	7	7	0	2	9	6	31	13.5
Long distance to farm	9	7	0	11	3	0	30	13.0
Scarcity of labour	9	5	5	0	1	0	20	8.7
Stealing of farm produce	9	0	1	0	0	0	10	4.3
Poor access to land	4	0	0	0	0	0	4	1.8
Total	55	35	35	35	35	35	230	100.0

Source: Authors' Field Data 2014

RAUF (2010) identifies similar challenges to PUA in Ibadan, including inadequate finance, climatic factors, poor pricing of both PUA and UPA produce, pests and diseases, prohibitive cost of farm inputs and lack of agricultural extension advice. Others were disposal of farm waste, misuse of agrochemicals, loss of farmlands, and inadequate access to land/competition from other land uses.

Testing Hypothesis for the Study

The study tested two hypotheses, namely:

H_0: There is no significant difference in opportunities enjoyed by farmers across the six local government areas.

H_1: There is a significant difference in opportunities enjoyed by farmers across the six local government areas.

H_0: There is no significant difference in challenges faced by farmers across the six local government areas.

H_1: There is a significant difference in challenges faced by farmers across the six local government areas.

Cross-tabulation, combined with Chi-square analysis and Contingency Coefficient, was used to test the significant differences. This was done using the Statistical Package for the Social Sciences (SPSS). The result of the analysis is shown in Tables 7, 8, 9 and 10.

Since the significant value of 0.00 is less than 0.05, H_0 was rejected and H_1 was accepted for both hypotheses. This means that there is a significant difference in the opportunities enjoyed and challenges faced by farmers across the six local government areas. Also, the contingency coefficient value of 0.516 which is less than1 (<1) (the larger the coefficient, the stronger the association) shows that there is a strong association between the opportunities enjoyed and the local government areas.

Table 7: Cross-tabulation of opportunities enjoyed in the area * Local Government Area

Opportunities Enjoyed	Local Government Area						
	Akinyele	Egbeda	Ido	Lagelu	Oluyole	Ona Ara	Total
Good soil	14	13	5	16	12	14	74
Abundance of land	28	16	26	19	7	13	109
Water availability	3	2	3	0	3	0	11
Nearness to market	5	4	0	0	9	2	20
Good roads	5	0	1	0	4	6	16
Total	55	35	35	35	35	35	230

Source: Authors' Field Data 2014

Table 8: Chi-Square Tests and Contingency Coefficient for Opportunities enjoyed in the area

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.822[a]	25	.000
Likelihood Ratio	77.604	25	.000
Contingency Coefficient	.516		.000
N of Valid Cases	215		

Source: Authors' calculation 2014

Table 9: Cross-tabulation of Challenges facing farming in the area * Local Government Area

Challenges	Local Government Area						
Challenges	Akinyele	Egbeda	Ido	Lagelu	Oluyole	Ona Ara	Total
Inadequate Finance	7	10	22	17	14	29	99
Farm encroachment by buildings	10	6	7	5	8	0	36
Erosion and flooding	7	7	0	2	9	6	31
Long distance to farm and bad roads	9	7	0	11	3	0	30
Poor access to land	4	0	0	0	0	0	4
Scarcity of labour	9	5	5	0	1	0	20
Stealing of farm produce	9	0	1	0	0	0	10
Total	55	35	35	35	35	35	230

Source: Authors' Field Data 2014

Table 10: Chi-Square Tests and Contingency Coefficient for Challenges in the Area

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.808E2[a]	45	.000
Likelihood Ratio	201.057	45	.000
Contingency Coefficient	.516		.000
N of Valid Cases	215		

Source: Authors' calculation 2014

The Future of Peri-urban Agriculture in Ibadan

Although agriculture is still a predominant activity of people in the peri-urban areas of Ibadan, the practice is confronted with many problems that undermine its potential to strengthen food availability for the city. As presented in Table 11, 54.4% of the farmers stated that the practice of peri-urban agriculture in Ibadan in the next five years will generate opportunities for future sustenance. They noted that peri-urban farming has high potential if well managed by all the stakeholders, who include individual farmers, local and state governments and government agencies like the Oyo State Agriculture Development Programme (OYSADEP), the Bureau of Physical Planning and Development Control (BPP&DC) and the Ministry of Agriculture.

However, 24.3% of the farmers perceived that the future was at risk and not sustainable based on the challenges facing agriculture, as earlier identified. They projected that farming could one day go into "extinction" in Ibadan's peri-urban areas if the rate of urban sprawl and physical development continued unchecked. Expressing disillusion, they thought that in the next ten years cultivable land in the peri-urban interface might have disappeared, having been transformed into residential, commercial, institutional, industrial and public land uses, if the desired attention was not given by government to agriculture in Ibadan.

Again, 21.3% of the farmers asserted that peri-urban agriculture as practised currently was not viable at all (Table11), and argued that given the challenges facing farming practice, food production would dwindle and become unstable. In addition, the activity would become more poverty-associated and perceived as a poor business venture if adequate strategies were not put in place to reduce or completely eliminate the identified challenges.

Table 11: How will you describe the future of peri-urban agriculture in Ibadan?

The Future	Frequency	%
It has potential if well managed	125	54.4
Catastrophic and at risk	56	24.3
Not viable	49	21.3
Total	230	100.0

Source: Authors' Field Data 2014

Conclusions and Recommendations

The study examined and assessed the role of peri-urban agriculture (PUA) in ensuring food availability in Ibadan. Based on the empirical evidence from this study, the following conclusions can be drawn from the findings:

i. Peri-urban agriculture has great potential in ensuring continuous food availability in the city.

ii. Peri-urban agriculture in Ibadan can reduce food scarcity in the city because it provides direct access to home-produced food to households and markets in the city.

iii. The future of peri-urban agriculture in Ibadan can be sustained if the identified opportunities are harnessed and the challenges adequately addressed.

There is the need to surmount the challenges of present and future food supply and to achieve food security in Ibadan. This task is not just an issue for the government, but also involves planners and everyone across the food system. Hence, some recommendations are made for securing and sustaining the future of peri-urban agriculture in Ibadan.

Farmers should be empowered by the Oyo State Agriculture Development Programme (OYSADEP) through its agricultural extension outfit. The OYSADEP should assist farmers to access soft loans and appropriate equipment to reduce the inadequacy of farm labour and increase their productivity. Adequate extension services should be regularly provided to equip farmers with the knowledge of how to control and prevent flooding and erosion on the farms.

Zonal town planning authorities in all the LGAs should ensure proper monitoring of developments and enforce strict adherence to relevant urban and regional planning laws and procedures. This will prevent

further sprawl developments in new areas and the consequent loss of agricultural lands in both the peri-urban and rural areas. The present Bureau of Physical Planning and Development Control (BPP&DC) should assist farmers by enacting policies for the incorporation and integration of agricultural land use into urban land use, especially through the designation of agricultural zones and the creation of more farm settlement schemes in the six less-urban local government areas of Ibadan to increase land availability for agriculture. Also, the floodplains of all streams and rivers traversing the peri-urban areas should be acquired by the government and adequately protected against all forms of physical developments, except agriculture which should be permitted only during the dry season to prevent products from being washed away. This will reduce the risk of flooding and erosion of the wetlands and ensure their availability strictly to only the farmers for both rainy and dry season farming.

At present, there are four farm settlements in Ibadan, namely Ijaiye Farm Settlement (Akinyele); Ajeja Vegetable Farm Settlement (Akinyele); Akufo Farm Settlement (Ido); and Lalupon Farm Settlement (Lagelu). Based on the authors' survey on the farms, only three of the farm settlements (Ijaye, Ajeja and Akufo) were functional, while the fourth, Lalupon Farm Settlement, was completely moribund. This implies that farmers need to be assisted by state and local governments to gain increased access to farmlands through the establishment of more farm settlements and the resuscitation of the non-functional one. This will assist farmers collectively in securing the needed farm labour since such farms may be mechanized, given the involvement of the state governments.

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