

1 Urban Agriculture among Households of Makurdi Metropolis of Benue State, Nigeria: Key 2 Challenges

3 4 Abstract

5 The survey was conducted to identify key challenges encountered by households in Makurdi
6 | metropolis of Benue state, Nigeria who are engaged in urban agriculture. A well-structured
7 questionnaire was used to collect data from a sample of 100 respondents used for the study. Data
8 were analyzed using frequency, percentage and mean score. Results show that a greater
9 percentage (46.0%) of the respondents engaged in cultivation of leafy vegetable, 22.0%
10 cultivated cassava, 21.0% planted sweet potato, 18.0% cultivated tomato while 56.0% reared
11 poultry, 23.0% kept goat, among others. Sources of agricultural information indicated by the
12 | respondents were family members/relations (85.0%), friends/~~neighbours~~neighbors (73.0%), radio
13 (68.0%), extension agents (57.0%), etc. Major challenges encountered by the respondents in
14 urban agriculture include inadequate size of farm land (M= 2.72), lack of access to credit
15 | facilities (M= 2.63), lack of funds (M= 2.50), high cost of ~~labour~~labor (M= 2.49), insecurity of
16 lands (M= 2.46), theft of crops at maturity (M= 2.38), lack of farm inputs such as improved
17 varieties of seeds, fertilizer and fertilizer (M= 2.23), destruction of crops by stray farm animals
18 (M= 1.96), among others. The study recommends that there is need for adequate provision of
19 farm inputs by government at all levels at subsidized rate in order to reduce the cost of
20 production and enhance optimum productivity.

21 **Keywords:** Urban agriculture, households, agricultural information, challenges

22 Introduction

23 Agriculture was primarily a rural activity in Nigeria, but due to increasing demand for
24 food and jobs for many urban dwellers, it became necessary for urban households to embark on
25 farming as a means of improving household food security and additional income for economic
26 empowerment. The rapid expansion of urban population puts direct pressure on food sources and
27 agricultural production, thus, there exists a serious challenge in supplying enough nutrition and
28 safe food among such rapid urbanization. Rapid urbanization has produced a large group of
29 urban poor, proliferating widespread issues like food insecurity and malnutrition in the
30 developing world. The global food price crisis and the protests across the world pointed to the
31 vulnerability of the urban poor [1].

32 Urban agriculture has become a contemporary issue, gaining prominence especially in
33 developing economies because it has been discovered to be a viable poverty intervention strategy
34 for the urban poor, since it contributes significantly to the socioeconomic development of cities
35 throughout the world. Urban agriculture serves as a veritable tool for poverty reduction among
36 people living in urban areas mostly low income earners and unemployed. With cities in Africa
37 growing rapidly, farming in the urban area is expected to play a greater role in feeding urban
38 population [2]

39 Urban agriculture (UA) has been widely upheld as a solution to the food crisis facing
40 increasingly metropolitan populations [3]. According to them, UA have a role to play in
41 addressing urban food insecurity problems, which are bound to become increasingly important
42 with the secular trend towards alleviating poverty in urban areas. Urban agriculture generates
43 significant livelihood opportunities, not only for urban farmers, but also for trades, input
44 suppliers and other service providers along the value chain for domestic produce [4]. However,
45 in some African countries like Nigeria, urban planning and development approaches do not
46 consider food production as an objective; thus, food production capacity may become severely
47 constrained as urbanization proceeds. In the absence of friendly land use policy and plan that
48 encourage urban farming, city farmers are subjected to harassment and subsequent eviction from
49 government lands. Some urban farmers gain access to land for urban farming only as customary
50 tenants on private land, and are only allowed to cultivate annual crops [5]. Urban agriculture
51 takes place on private, leased or rented land in peri urban and urban backyards, vacant public
52 lands such as industrial parks, school grounds, roadsides, prison and other institutions, ponds,
53 lakes and rivers [6].

54 The factors responsible for the steady increase in UA (especially in Nigeria) include the
55 rise in food prices, unemployment and inflation brought about by structural adjustment, and the
56 decline in the real incomes of both rural and urban households [7]. The rapid movement of
57 people from the rural areas into the towns and cities (urbanization) is the main driver of urban
58 agriculture, because in many countries rapid urbanization is usually followed by increasing urban
59 poverty, food insecurity and malnutrition, and has given birth to a large class of urban poor in
60 many developing countries including Nigeria [8]. Some of the challenges associated with the
61 practice of urban agriculture include urban farmers are poorly organized, are more dispersed and
62 have a strong variation in social background; increasing demand for land by estate developers for
63 housing and commercial facilities which thus reduces access to lands for farming activities;
64 farming within the cities is also associated with health hazards through the use of untreated
65 wastewater for crop irrigation; financial assistance (from banks and other institutions) is difficult
66 to obtain due to insufficient collateral and the long term nature of agriculture [9] .

67 Current scientific literature regarding UA has its shortcoming as most studies are single-
68 city studies. Reliable data are therefore necessary to put forward urban farming practices and its
69 potential benefits to city planners. This will help the municipal authorities and urban planners in
70 integrating urban farming into the urban system in a more viable and sustainable way [10].

71 This study sought to answer the following questions in order to fill the research gap
72 emanating from studies carried out by other authors. What are types of crops grown by the
73 respondents? What are sources of agricultural information used by the respondents? And what
74 major challenges encountered by the respondents in urban agriculture?

75 The specific objectives of the study were to:

76 | i. ~~identify~~ Identify types of crops grown/livestock kept by the respondents;

- 77 | ii. ~~ascertain~~Ascertain sources of agricultural information used by the respondents; and
78 | iii. ~~identify~~Identify challenges encountered by the respondents in urban agriculture.

79 | **Methodology**

80 | The study was carried out in Benue state, Nigeria. Benue state is one of the 36 states of
81 | Nigeria located in North Central Nigeria. The state is made up of three geo-political zones,
82 | namely; Zone A (Eastern zone), Zone B (Northern zone) and Zone C (Central zone). It has
83 | twenty-three (23) local government areas. Benue state has an area of 2,882 km² with a population
84 | of 4,253,641 people [11]. It shares boundaries with five other States namely; Nasarawa to the
85 | north, Taraba to the east, Cross River to the south, Enugu to the south-west and Kogi State to the
86 | west. The state also shares a common boundary with the Republic of Cameroon on the south-
87 | east. Major occupation of the people living in rural areas of the state is farming. The inhabitants
88 | of the state living in cities engage in non-farm occupations such as civil service, teaching, petty
89 | trading, commercial driving, etc. and are also involved in urban agriculture for household food
90 | security. The urban farmers grow crops which include yam, cassava, maize, sweet potato, tomato
91 | and leafy vegetables. They also keep livestock such as goat, poultry, pig, etc. The population of
92 | the study comprised all the urban farmers in Benue State, Nigeria. Two zones, namely; Zone A
93 | and Zone B were selected for the study using a simple random sampling technique. A major
94 | urban town was selected from one local government area from each of the geo-political zones. In
95 | each of the towns selected, 50 urban farmers were selected using simple random sampling
96 | technique. This gave rise to a sample size of 100 respondents used for the study. Questionnaire
97 | was used to collect data from the respondents. Data were analyzed using frequency, percentage
98 | and mean score.

99

100 **Results and Discussion**

101 |
102 **Types of crops grown/livestock kept**

103 Results in Table 1 show that a greater percentage (46.0%) of the respondents engaged in
104 cultivation of leafy vegetable, 22.0% cultivated cassava, 21.0% planted sweet potato, 18.0%
105 cultivated tomato, among others (Table 1). This implies that the respondents engaged in mixed
106 cropping in order to guard against crop failure and ensure household food security. The finding is
107 agrees with [12] who stated that mixed cropping is practiced by urban farmers in Imo state,
108 Nigeria which is not surprising since land is often scarce in urban areas. They make use of any
109 available space by planting different varieties of crops in a particular farm land.

110 A greater percentage (56.0%) of the respondents kept poultry, 23.0% kept goat, among
111 others (Table 1). It implies that the respondents engaged in mixed farming which helps them to
112 be economically stronger to take care of their families. The findings agree with a study carried
113 out by [13] which stated that urban farmers in Nasarawa state were involved in mixed farming.

114

115 **Table 1: Percentage distribution of respondents according to types of crops grown/livestock**
 116 **kept (n= 100)**

Variables	Frequency*	Percentage
Crops grown		
Yam	3	3.0
Cassava	22	22.0
Maize	14	14.0
Sweet potato	21	21.0
Tomato	18	18.0
Leafy vegetable	46	46.0
Livestock kept		
Goat	23	23.0
Poultry	56	56.0
Pig	15	15.0
Rabbit	12	12.0

117 *Multiple responses

118 **Sources of agricultural information used by the respondents**

119 Majority (85.0%) of the respondents obtained agricultural information from family
 120 members/relations, 73.0% received from friends/neighboursneighbors, 68.0% obtained from
 121 radio, 57.0% sourced from extension agents, among others (Table 2). This indicates that the
 122 respondents obtained agricultural information mostly from informal sources. The findings agree
 123 with a study carried out by [14] which reported that farmers receive their farm information from
 124 non-professional inter-personal sources such as fellow farmers, family members and friends
 125 more often than professional sources.

126 **Table 2: Distribution of respondents according to sources of agricultural information**
 127 **(n=100)**

Source of agricultural information	Frequency	Percentage
Radio	68	68.0
Newspaper	3	3.0
Magazine	1	1.0
Television	1	1.0
Extension agent	57	57.0
Internet	2	2.0
Farmers' association or group	24	24.0
Market or trade union organization	10	10.0
Family members/relations	85	85.0

Friends/neighbours	73	73.0
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128 *Multiple responses

129 **Challenges encountered by the respondents in urban agriculture**

130 Table 3 shows challenges encountered by the respondents in urban agriculture which
 131 include inadequate size of farm land (M= 2.72), lack of access to credit facilities (M= 2.63), lack
 132 of funds (M= 2.50), high cost of ~~labour~~labor (M= 2.49), insecurity of lands (M= 2.46), theft of
 133 crops at maturity (M= 2.38), lack of farm inputs such as improved varieties of seeds, fertilizer
 134 and fertilizer (M= 2.23), destruction of crops by stray farm animals (M= 1.96), among others.
 135 According to [15], availability and access to land have been the crucial elements for engagement
 136 in urban agriculture. This finding is consistent with that of [16] who reported that land access
 137 and tenure security including harassment by environmental authorities are major problems faced
 138 by urban farmers in Abuja, Nigeria. This finding is also in line with most studies that had earlier
 139 indicated that theft of crops is a major constraint to urban agriculture [17, 18].

140 **Table 3: Mean score of challenges encountered by the respondents (n=100)**

Challenges	Mean score
Lack of funds	2.50
Lack of access to credit facilities	2.63
Destruction of crops by stray farm animals	1.96
High cost of labour	2.49
Small size of farm land	2.72
Lack of irrigation facilities	2.29
Pests and diseases infestation	1.72
Inadequate provision of farm inputs such as improved varieties of seeds and fertilizer	2.23
Lack of access to high breeds of livestock	2.18
Climate variation resulting in drought	1.82
Lack of storage facilities	2.23
Insecurity of lands	2.46
Poor transport facilities	1.81
Lack of labour labor-saving technologies	1.62
Poor access to sufficient farm land	2.63
High cost of farm inputs	2.29
Poor soil fertility	2.11
Theft of crops at maturity	2.38

Instability of government policy	1.90
Time constraint as a result of work load	2.10

141

142 **Conclusion and Recommendations**

143 Findings indicate that the urban farmers were engaged in mixed cropping as well as
 144 mixed farming. This is to ensure household food security and enable them to be economically
 145 stronger to take care of their financial needs. The respondents sourced information mostly from
 146 interpersonal sources such as family members and friends. Inadequate size of farm land was a
 147 major challenge. This is not surprising because land is a scarce resource in urban areas. Many
 148 farm lands are too small for the farmers to cultivate crops. Theft of crops at maturity was also a
 149 serious challenge to urban farmers. Crops are stolen by thieves if they are not properly guarded
 150 which forces people to harvest them before they are fully matured. Also, a major challenge was
 151 destruction of crops by farm animals. This may be attributed to the fact that some farmers allow
 152 their animals to roam about in search of food and water.

153 The study recommends that there is need for adequate provision of farm inputs by
 154 government at all levels at subsidized rate in order to reduce the cost of production and enhance
 155 optimum productivity. Efforts are also needed by extension agencies in ensuring that urban
 156 farmers obtain adequate agricultural information which is paramount for increase in production
 157 as well as ensuring household food security.

158 **ETHICAL ISSUES**
 159 Authors have declared that no ethical issues exist.

160 **References**

161
 162 1. Andersson DA. African urbanization trends and implications for urban agriculture. In:
 163 Magnusson, U. and Bergman, K. F (Eds.), Urban and peri-urban agriculture for food
 164 security in low-income countries. *Swedish University Agricultural Science Global*
 165 *Journal*. 2014; 6-9.
 166

- 167 2. Olaniyi AO. Attitudinal disposition of urban dwellers towards participation in urban
168 agriculture in Oyo State, Nigeria: Implication for sustainable food production. *Asian*
169 *Journal of Agricultural Research*. 2012; 6:1-11.
170
- 171 3. Stewart R, Korth M, Langer L, Rafferty S, Da Silva NR, Van Rooyen C. What are the
172 impacts of urban agriculture programs on food security in low and middle-income
173 countries? *Environment Evidence*. 2013; 2:7.
174
- 175 4. Lagerkvist CJ. Economic drivers for urban and peri-urban agriculture. In: U. Magnusson
176 and K.F. Bergman (Eds.), *Urban and peri-urban agriculture for food security in low-*
177 *income countries: Challenges and knowledge gaps. Swedish University Agricultural*
178 *Science Global Journal*. 2014; 11-15.
179
- 180 5. Wakuru M, Drescher AW. Integration of urban agriculture into spatial planning. In:
181 Shackleton, C. N., Pasquini, M. W. and Drescher, A.W. (Eds.), *African indigenous*
182 *vegetables in urban agriculture*, Earthscan, London. 2009: 245.
183
- 184 6. Hovorka A, Zeeuw H, Njenga M. *Women Feeding Cities: Mainstreaming Gender in*
185 *Urban Agriculture and Food Security*. Practical Action Publishing Ltd. U.K. 2009: 5-20.
186
- 187 7. Umoh GS. Resource use efficiency in urban farming: an application of stochastic frontier
188 production function. *International Journal of Agriculture and Biology*. 2006: 38-44.
189
- 190 8. Idowu O, Cofie O, Adeoti A. Gender analysis of land use for urban agriculture and
191 sustainability of livelihoods in Freetown, Sierra Leone. *African Journal of Agricultural*
192 *Research*. 2012; 7(5): 676-683.
193
- 194 9. Cofie O. Emerging issues in urban and peri-urban agriculture in West Africa. Brief Note.
195 International Water Management Institute Publication. 2008.
196
- 197 10. Magnusson U, Bergman KF, Katunguka–Rwakishaya E. Introduction to urban and peri-
198 urban agriculture for food security. In: Magnusson, U. and Bergman, K.F. (Eds.), *Urban and*
199 *peri-urban agriculture for food security in low-income countries: Challenges and knowledge*
200 *gaps. Swedish University Agricultural Science Global Journal*. 2014: 4-5.
201
- 202 11. National Population Commission (NPC) (2006). National population census figure, Abuja,
203 Nigeria.
- 204 12. *Asadu AN, Egbujor CL, Chah JM, Ifejika PI*. Gender Roles in Urban Crop Production in
205 Imo State, Nigeria. *Journal of Agricultural Extension*. 2013;17 (2):1-6.
- 206 13. Salau ES, Attah AJ. A socio-economic analysis of urban agriculture in Nasarawa State,
207 Nigeria. *PAT*. 2012; 8(1): 17-29.
208

- 209 14. Anyanwu AC, Agwu AE, Umeweni CA. Sources of agricultural information used by women
210 farmers in Orumba North Local Government Area of Anambra State, Nigeria. *ASSET Series*.
211 2002; 2 (1): 97-104.
- 212 15. Baumgatner B, Belevi H. Overview of urban agriculture in developing countries. Swiss
213 Institute for Environmental Science and Technology. Department of Water and Sanitation.
214 2001.
215
- 216 16. Egbuna N. Urban agriculture as a strategy for poverty alleviation. 2008. Retrieved February
217 23rd, 2019. Available at: www.ecomod.org/files/papers/1055.doc.
218
- 219 17. Foeken D, Owuor SO. Urban farmers in Nakuru, Kenya. ASC Working paper No. 45.
220 African Study Centre, Leiden. 2000.
221
- 222 18. Chah JM, Onwubuya EA, Asadu AN. An assessment of the contribution of urban crop
223 agriculture in Nigerian cities: A case study of Enugu Metropolis, Enugu State, Nigeria.
224 *Journal of Agricultural and Food Information*. 2010; 11 (3): 233-247.
225
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