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*Full Length Research Paper*

# Role of socioeconomic parameters in determining the efficacy of urban agriculture in providing food security in Birnin Kebbi metropolitan area, Kebbi State, north western Nigeria

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**The study on urban agriculture was conducted in Birnin Kebbi metropolis of Kebbi State during 2009/2010 cropping season. Population size for the target study area was consisted of participating urban farmers in the metropolis. Ten districts (areas) around the city were purposively selected for the study. In each area, ten [10] respondents were randomly selected, making a total sample size of one hundred (100) respondents. Both descriptive and inferential statistics were used to analyze the data obtained from the administered questionnaires. A finding from the research revealed that majority of the respondents cultivate food crops such as rice, maize, sorghum, millet, spinach etc., around the vacant spaces in the city and some of the respondents were found rearing animals (sheep, goats, cattle, birds etc.) in their houses. The study further indicates that majority of the respondents identified low level of capital as their major problem in urban farming. The research revealed that urban farming serves as a good source of horticultural crops and small livestock in the study area. The common problems faced by the urban farmers included lack of adequate fund, strict regulations on the land use for agricultural activities in the cities and lack of agricultural inputs. The result of the study also showed that the socio-economic status of the farmers is significantly related with the participation in urban farming, family size ($\chi^2$=8.762, p<0.05); level of education ($\chi^2$=10.089, p<0.05). It's recommended that financial institutions, government and non-governmental organizations should provide urban farmers with facilities such as loans, inputs, extension services, and removal of strict regulations on the use of land for agricultural activities by the government.**

**Keywords:** Socioeconomic factors, urban agriculture, food security and Birnin Kebbi metropolis.

## INTRODUCTION

Urban agricultural activities are attracting considerable interest from both developed and developing countries. It has been indicated universally that urban agriculture is a vital component for the existence of most cities, especially in the developing countries where it contributes substantially to the urban economy of the city dwellers in terms of employment and the supply of food (UNDP, 1996; Danso, 2002).

Urban agriculture is a complex system encompassing wider spectrum from core of activities associated with the production, processing, marketing, distribution and consumption of food and non food, plant and tree crops and animal husbandry both within urban and peri-urban areas; to multiplicity of other benefits and services that are less widely acknowledge and documented (Maxwell and Ziwa, 1992; Mazingira, 1994; Butler and Moronek, 2002; Smit, et. al., 2002). Danso (2002), however, viewed

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urban agriculture in Nigeria as the growing of plant and the raising of animals for food and other uses within and around cities or towns, and related activities such as the production and delivery of inputs, and the processing and marketing of agricultural products. Urban agriculture take place within a city and its metropolis and it comprises of a variety of production systems, ranging from subsistence production and processing at household level to fully commercialized agriculture (Danso, 2002).

Urban agriculture plays a vital role in the sustenance and food security (availability and access to food) of most cities, contributed impressively fifteen percent (15%) of total world food production and over one third of the city dwellers are found to engage in city faming worldwide (UNDP, 1996). Despite the global contribution of urban agriculture to food security, urban agricultural production in Nigeria has suffered neglects by farmers as well as government officials, policy makers, agricultural planners and scholars. This could be attributable to lack of understanding of its importance in food security. It is in this regards that this study intends to investigate the role of socioeconomic parameters in determining the efficacy of urban agriculture in providing food security in Birnin Kebbi metropolitan area, Kebbi state, north western Nigeria. The objectives of the study are to:-

i) Determine the socio-economic characteristics of the urban agricultural farmers

ii) Investigate the common farming types adopted by the urban farmers

iii) Determine the degree of respondent's participation in urban agriculture

iv) Determine the benefit derived from the urban agriculture

v) Determine the constraints of urban agricultural practices

## Hypothesis

There is no significant relationship between urban farmer's socio-economic characteristic (age, education, marital status, gender and size of farm) and their participation in urban agricultural activities.

## METHODOLOGY

### The Study Area

The study was carried out in Birnin - Kebbi metropolis due to abundance of urban farmers and fertile land for agricultural activities. Birnin - Kebbi Local Government Area lies in the central part of Kebbi State and it lies between latitudes $10^0$ and $13.5^0$N and longitude $3^0$ and $6^0$W. It shares a common boundary with Kalgo in the west, Jega and Aliero in the South, Gwandu in the east and Argungu Local Government Area in the North. The climate of the area is generally characterized by high temperatures ranging between March and May with means annual temperature varying between $38^0$c to $42^o$c and the area experiences harmattan wind between late November to early February, with temperatures as low as $23^0$c. Rainfall usually begins in early May, heavy fall between July and October with mean annual rainfall varying between 500mm to 800mm. The metropolitan area is predominantly located in the Sudan savannah agro-climatic zone which is characterized by scattered trees, shrubs and limited rain fall.

### Sampling procedure and sample size

The target population for the study consisted of participating urban farmers in Birnin - Kebbi metropolis. Ten areas around the city were purposively selected for their known potential in urban agriculture. The selected areas are old town, Makera-Gandu, Badariya, Bayan-kara, Yar-yara, Gessey phase 1 and 2, Nasarawa 1, Nasarawa 11, Rafin Atiku and Aleiro estate. In each area, ten (10) respondents were randomly selected, making a total sample size of one hundred (100) respondents constituting the sample size of the study.


Map showing Birnin Kebbi metropolis and sampling points

### Data Collection and Analysis

The data for the study was collected with the aids of structured questionnaires supplemented by an oral interview due to low literacy level of the respondents. The data were analyzed using the descriptive statistics in the form of frequency count and percentages as well as the inferential statistics, chi-square test. The analysis was done with the aid of Statistical Package for Social Sciences (SPSS) Software version 16.

Measurement of variables

| Variable | Variable definition |
|---|---|
| Socioeconomic parameters | Respondent age (years), marital status (married, single, divorce, widowed); family size ( number of household members); educational attainment of the respondent (Qur'anic education, primary, secondary and tertiary educations) |
| Degree of participation in urban agriculture | Full participation ( where urban agriculture is the primary occupation) and partial participation ( where it serves as the secondary occupation) |
| Perception of the respondents on the benefit derived from urban agriculture | 4 points Likert scale was used- Highly satisfied, Moderately satisfied, slightly satisfied and Not satisfied |

**Table 1**. frequency distribution of respondents according to socio-economic characteristic (n=100)

| Variables | Categories | Frequency | Percentage |
|---|---|---|---|
| **Age** | Less than 20 years | 07 | 07.0 |
| | 21-40 years | 68 | 68.0 |
| | 41-60 years | 21 | 21.0 |
| | More than 60 years | 04 | 04.0 |
| **Marital status** | Single | 23 | 23.0 |
| | Married | 67 | 67.0 |
| | Divorced | 05 | 05.0 |
| | Widowed | 05 | 05.0 |
| **Family size** | 1-5 family members | 07 | 07.0 |
| | 6-10 family members | 10 | 10.0 |
| | 11-15 family members | 24 | 24.0 |
| | 16-20 family members | 24 | 24.0 |
| | 20 and above family members | 35 | 35.0 |
| **Educational attainment** | Qur'anic education | 21 | 21.0 |
| | Primary education | 06 | 06.0 |
| | Secondary education | 43 | 43.0 |
| | Tertiary education | 30 | 30.0 |

Source: field survey, 2009

## RESULTS AND DISCUSSIONS

### Socio-economic characteristics of the Respondents

### Age distribution of the respondents

Table 1 shows that majority (68.0%) of the urban farmers were within the age range of 21-40 years, 21.0% were within the age bracket of 41-60 years, 7.0% were within the age range of less than 20 years and only (4.0%) were within the age bracket of 60 years and above. The result implies that majority of farmers are in their productive years to effectively cope with the rigors of urban farming. This statement is in corroboration with Ango (1999) who posits that the ages of 31-40 years are the active productive years of a farmer.

### Marital status of the respondents

Table 1 indicates that majorities (67.0%) of the respondents were married, 23.0% were single, 5.0% were widowed and only (5.0%) were divorced. The reason behind high percentage of married respondent in the study area could be due to religious obligations. This statement is in corroboration with Buhari (2008) who posits that the high percentage of married farmers in Birnin Kebbi Local Government Area is attributed to the

**Table 2**. Frequency distribution of respondents according to occupation before and after engaging in to urban farming (n=100).

| Variables | Categories | Frequency | Percentage |
|---|---|---|---|
| **Primary occupation before urban farming** | Rainy season farming only | 52 | 52.0 |
| | Civil service. | 21 | 21.0 |
| | Hired laborers. | 15 | 15.0 |
| | Trading | 03 | 03.0 |
| | Jobless | 09 | 09.0 |
| **Primary occupation after engaging in to urban farming** | Urban crop Farming | 77 | 77.0 |
| | traders | 06 | 6.0 |
| | hired laborers | 04 | 4.0 |
| | Civil servants | 13 | 13.0 |

Source: Field Survey, 2009

socio-cultural and religious believers of the farmers where marriage is encouraged as a signs of responsibility and religious obligation.

**Family size of the respondents**

Table 1 also revealed that 35% of the respondents were having 20 and above people as members of the household, 24% of respondents were having 16-20 members of household, 24% of the respondents were having 11-15 members of household, 10% of respondents were having 6-10 household members, 7% of respondents were having 1-5 members of household. The reason behind large family size among the respondents could be attributed to the polygamous nature of respondents and their dependence on family as source of labour. This statement is in corroboration with Ango (1999) who posits that the reason behind large family size could be due to polygamous nature of the Hausas and their dependence on family as source of farm labours.

**Educational Attainment**

Table 1 further reports that all (100%) of the respondents have attained certain form of education. Most (43%) of the respondents attained secondary education, 30% of the respondents attained tertiary education, 21% of the respondents had qur'anic education and only (6%) had primary education. This shows that the level of education of the respondents is high, the attainment of high level of education was found to have positive impact on the level of respondents' participation in city farming. This statement is in line with Buhari (2008) who reported that the high level of literacy among farmers may contribute to their level of participation in Agricultural activities.

**Respondent's occupation before and after engaging in to urban farming**

Table 2 shows that most (52%) of the respondents engage in rainy season farming before urban agricultural business, 21% of the respondents are in to civil service while 15% are hired laborers and only (9%) are found jobless before engaging in to urban agricultural activities. This implies that majority of the respondents already have raining season farming as business before engaging in to urban farming but looking for any other alternative job or remaining idle at the remaining months of the year (dry season). This statement is in accordance with Yahaya et al (2000) who states that most farmers were in to fadama dry season farming in order to avoid idleness at the end of the rainy season farming activities.

Table 2 further revealed that majorities (77%) of the respondents are in to full urban farming, 13% are civil servants practicing urban agriculture, 6% are traders practicing urban farming, and 4% of the respondents are hired laborers for urban farmers. The reason behind the majority of the respondents having urban farming as primary occupation may be attributed to farming being their occupation before fully engaged in to urban agricultural activities and the availability of land for farming activities, which helps them remedying their problems of lack of enough food for the household.

**Types of urban agricultural activities**

**Crops grown**

Table 3 shows that majorities (72%) of the respondents produce food crops, 20% produce vegetables crops, while only (8%) of the respondents produced horticultural crops. The reason behind higher percentage of food crops in the study area may be attributed to the com-

**Table 3**. Frequency distribution of respondents according to types of urban agriculture practiced. (n=100)

| | | | |
|---|---|---|---|
| **Types of crop grown** | Food crops | 72 | 72.0 |
| | Vegetable crops | 20 | 20.0 |
| | Horticultural crop | 08 | 08.0 |
| **Types of animal kept** | Cattle | 50 | 50.0 |
| | Sheep and goats | 40 | 40.0 |
| | Birds | 10 | 10.0 |

Source: Field Survey, 2009

**Table 4**. Frequency distribution of respondents according to the perception of benefit derived from urban farming based on the degree of participation (n=100)

| Variable | Categories | Frequency | Percentage |
|---|---|---|---|
| Degree of participation in urban agriculture. | Fully involved | 67 | 67.0% |
| | Partially involved | 33 | 33.0% |
| Contribution of urban agriculture towards food security. | High contribution to food security. | 44 | 44.0% |
| | Average contribution to food security | 36 | 36.0% |
| | Less contribution to food security. | 15 | 15.0% |
| | No contribution to food security | 15 | 15.0% |

Source: field survey, 2009.

position of the soil which makes the land suitable for production of food crops (rice, maize, sorghum, cowpea, potatoes, cassava etc.) and its being a staple food for the people in the study area.

## Animals Kept

Table 3 further reveals that most (50%) of the respondents reared cattle, 40% reared sheep and goats, while only (10%) of the respondents were found rearing birds (poultry, ducks etc). The higher percentages among the respondents were found rearing cattle and sheep/goats because ownership of these animals is considered a yardstick to measure the socio-economic status of the respondents in the study area.

## Degree of participation and perception of benefit derived from the urban agricultural activities

Table 4 revealed that majority (67%) of the respondents participated fully in urban farming practices while 33% of the respondents participated partially in urban agricultural practices. The reason behind high level of participation in urban agricultural activities could be due to avoidance of idleness and benefit derived from the urban agricultural activities.

As shown in table 4, 44% of the respondents perceived that urban agriculture contributes highly to food security of the household, 36% of the respondents perceived that urban agriculture contributed averagely to provision of food to the household, 15% perceived that urban agriculture have contributed less to food security of the household and 15% of the respondents perceived that urban agriculture did not lead to reduction of household food insecurity. The reason behind higher percentage of the respondents perceiving high contribution of urban agriculture to food security of the household could be due to food produce and income drive, which helps to purchase other essential commodities. This statement is in corroboration with Tokumbo (2003), who posits that the poverty prevalence among urban residents includes lack of purchasing power, exposure to risk and less opportunity for income generation.

## Sources of capital for the urban farmers

Table 5 further indicates that majority (77%) of the respondents identified personal saving as their source of capital, 9% obtains capital from government, 7% obtains capital from co-operatives, 3% from banks, 2% obtains capital from friends and only (2%) of the respondents obtained capital from ajo (group lending). The reason

**Table 5.** Respondents sources of capital for urban agricultural activities (n=100)

| Source of capital | Frequency | percentage |
|---|---|---|
| Friends | 02 | 02.0 |
| personal saving | 77 | 77.0 |
| government | 09 | 09.0 |
| co-operatives | 07 | 07.0 |
| banks | 02 | 02.0 |
| *ajo* (thrift) | 03 | 03.0 |

**Table 5**. Respondent's distribution based on assessment of benefit derived from urban agriculture. (n=100)

| Variables | Categories | Frequency | Percentage |
|---|---|---|---|
| Benefit derived assessment. | Highly satisfied | 68 | 68.0 |
| | Moderately satisfied | 21 | 21.0 |
| | Slightly satisfied | 08 | 08.0 |
| | Not satisfied | 03 | 03.0 |

Source: Field Survey, 2009

**Table 6**. Test of relationship between respondent's socio-economic characteristics and participation in urban farming

| Variables | $X^2$-value | Df | P-value | Remark |
|---|---|---|---|---|
| Age and participation in urban farming. | 3.677 | 3 | 0.298 S | reject Ho |
| Gender and participation in urban farming. | 0.474 | 3 | 0.491 S | reject Ho |
| Marital status and participation in urban farming. | 1.911 | 1 | 0.591 NS | Accept Ho |
| Family size and participation in urban farming. | 8.762 | 4 | 0.057 NS | accept Ho |
| Level of education and participation in urban farming. | 10.089 | 3 | 0.018 S | Reject Ho |

Source: field survey 2009
NS= Not Significant at $p > 0.05$
S = Significant level at $p < 0.05$
df= degree of freedom

behind majority of the respondents were found sourcing capital from personal saving could be due to the higher income generated from the urban farming. This statement is in accordance with the findings of Mbiba (1995), who posits that urban farmers spent between 60 and 80% of their income on urban farming in order to expand their agricultural production.

**Benefit assessment of the urban agriculture among the participants.**

Table 5 indicates that majority (68%) of the respondents were highly satisfied with the benefit derived from the urban farming, 21% were moderately satisfied, 8% of the respondents were slightly satisfied and only(3%) of the respondents were not satisfied with the benefit derived from the urban farming. This indicates that urban agriculture is an agricultural activity that leads to provision of food security to the participating household members. This statement is in accordance with FAO (1999) which reported that Social benefits that have emerged from urban agricultural practices are better health and nutrition, increased income, employment, food security within the household, and community social life.

**Test of Research Hypothesis**

The chi-square ($\chi^2$) analysis in table 6 indicates that the participation in urban farming is not affected by the marital status of the farmers ($\chi^2$=1.911, p=0.591). Null

**Table 7**. Frequency distribution of respondents according to the constraints of urban agricultural practice (n=100)

| Variable | Categories | Frequency | Percentage |
|---|---|---|---|
| Problems of urban agric. practices in the area. | low level of income | 59 | 59.0 |
| | inadequate labour | 05 | 5.0 |
| | inadequate storage and processing facilities | 17 | 17.0 |
| | inadequate marketing channels | 03 | 3.0 |
| | government regulations | 16 | 16.0 |
| Solution to urban agricultural problems. | Provision of enough funds for urban farmers. | 58 | 58.0 |
| | Provision of processing and storage facilities by government. | 17 | 17.0 |
| | Provision of land and removal of strict regulations on land for agric. purpose in the cities by government. | 20 | 20.0 |
| | Provision of agricultural inputs | 05 | 5.0 |

Source: field survey, 2009

hypothesis is therefore accepted. This implies that participation in urban farming is meant for both married and unmarried respondents. The result in the table also shows that there is significant relationship between the level of education of the farmers and their participation in urban farming ($\chi^2$ =10.089, p=0.018). Therefore the null hypothesis is rejected. This implies that the level of literacy among respondents contributed to their level of participation in to urban farming activities. It also shows that there is significant relationship between the family size of the respondents and their participation in city farming ($\chi^2$=8.762, p=0.057). Therefore the null hypothesis is accepted. This result indicates that the level of participation of the city farmers does not depend on their family size.

**Constraints of urban agricultural practice in the study area**

Table 7 shows that most (59%) of the respondents identified low level of income, 17% identified inadequate storage facilities, 16% identified government regulations , 5% identified inadequate labor and 3% identified inadequate marketing channels. The reason behind higher percentage of low level income could be due to the fact that most of the respondents that engaged in urban farming are living below poverty line, therefore they cannot be able to produce enough for household consumption and at the same time producing more for market sales.

**Solution to the problems of Urban Agricultural Practices**

Table 7 further revealed that 58% of the respondents identified the provision of enough fund for urban farmers by government and non-governmental organizations, 17% of the respondents identified provision of adequate processing and storage facilities by government, 20% identified provision of land and removal of strict regulations on the use of land for agricultural purposes in the cities by government, 5% of the respondents identified provision of agricultural inputs. The result implies that provision of enough funds, land, removal of strict regulations on land use, marketing channels, processing and storage facilities will make the urban farmers to produce enough food for household consumption and more for market sales. This statement corroborated with Bosschaert (2007) who reports that urban agriculture expands the economic bases of the city through production, processing, packaging, and marketing of consumable products, which enhances reduction in food cost and production of better quality foods and fibers.

**CONCLUSIONS**

Based on the objectives, research questions and hypothesis that guided this study, it could be concluded that majority of the urban farmers are married with large family size. Most of the respondents were found to attain certain level of education and engaged in producing food crops and rearing of animals. It's evident from the study that most of the urban farmers were faced with problems of lack of enough funds and strict regulations on the use of land for agricultural activities. Provision of enough funds by both government and non-governmental organization and removal of strict regulations on the use of land for agricultural activities by the government were found to be a solution to the problems faced by the respondents. It's finally concluded that there is significant

relationship between farmer's socio-economic characteristics (family size and level of education) and their participation in urban farming.

## RECOMMENDATIONS

Based on the findings, discussions and conclusion drawn from the study, the following recommendations are deemed necessary.

1. Financial institutions, government and non-governmental organizations should provide urban farmers with facilities such as loans and agricultural inputs.
2. Urban farmers irrespective of their gender should be provided with agricultural extension support.

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