

GENDER ANALYSIS OF URBAN VEGETABLE PRODUCTION IN OJO LOCAL GOVERNMENT AREA, LAGOS STATE, NIGERIA

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ABSTRACT

Urban vegetable production has been discovered to be a viable poverty intervention strategy for the urban poor, and in-depth understanding of the gender perspective to its production is imperative. The study assessed gender analysis of urban vegetable production in Ojo Local Government Area, Lagos State, Nigeria. A snowball sampling procedure was used to select 106 respondents for the study and primary data were collected with the aid of a questionnaire. The average age of the respondents was 45 years, the majority (59.4%) of them were female, 72.6% were married, 48.1% had secondary education, 50.0% hired labour with average farmland of 2 hectares, and farming experience and family size were 11 years and five people respectively. Males participated more in harvesting for sale ($\bar{x}=3.79$) and irrigation ($\bar{x}=3.09$), while females participated more in marketing ($\bar{x}=3.76$), purchasing seeds/seedlings ($\bar{x}=3.46$), and spraying ($\bar{x}=3.44$). The major reasons responsible for male and female participation in urban vegetable production were a passion for vegetable farming ($\bar{x}=4.33$) and improved household nutrition ($\bar{x}=4.27$). Respondents were mostly constrained by high costs of inputs ($\bar{x}=2.72$), pests and diseases ($\bar{x}=2.59$), and poor funding ($\bar{x}=2.56$). Significant ($p<0.05$) relationships existed between source of farm labour ($\chi^2=18.38$, $df=3$), farming experience ($r=0.22$), family size ($r=-0.26$), and constraints facing respondents' production ($r=0.28$) with participation in urban vegetable production. Significant differences exist between male and female participation in vegetable production ($t=1.05$, $p<0.01$). Therefore, providing more financial assistance, seeds and an enabling environment will further enhance male and female participation in urban vegetable production.

Keywords: Gender, Urban, Vegetable production, Lagos

INTRODUCTION

Urban farming has been discovered to be a viable poverty intervention strategy for the urban poor (Asadu *et al.*, 2014). Farming in urban areas has been in existence for several decades in many countries, and it plays an important role in ensuring food security and social well-being (Mok *et al.*, 2014). One of the major benefits of urban agriculture worldwide is the production of horticultural crops (Eigenbrod & Gruda, 2015). Urban horticulture has been listed as

the most competitive branch of urban farming (Orsini *et al.*, 2013) and vegetable production is a key branch in horticulture. Urban vegetable production simply involves growing vegetables within and around cities (Folayimi *et al.*, 2019). This type of production usually takes place in backyards, rooftops, community fruit and vegetable gardens, and public or unused spaces (Food and Agricultural Organisation of the United Nations, 1996). It is also being carried out in greenhouses and open

spaces. Most time they are small-scale and are scattered around the city.

Considering the high cost of urban land, growing vegetable is more profitable than growing other arable crops. This is because vegetables have a very short production cycle which makes several productions possible within a year. For instance, some vegetables can be sown and harvested between 30 and 60 days and sometimes even less especially when cultivated from seedlings (Dubbeling *et al.*, 2010). This coupled with its high water and fertilizer efficiency makes it a lucrative farming venture. Also, it has an advantage due to its special nutritional value and requires no further processing after harvesting (Eigenbrod & Gruda, 2015). This makes it a promising area in urban agriculture.

With the increasing rate of rural-urban migration, unemployment, worsening conditions of the urban poor, food scarcity as a result of environmental degradation, the prevalence of food insecurity, and so on in Nigeria, there is a need to look into areas that present sustainable solutions and urban vegetable production fit into this category. Urban farming has been established to improve food supply, local economy, health conditions, social integration, and environmental sustainability (Orsini *et al.*, 2013). It is important to consider this using gender lens because in many households, tasks and responsibilities performed by the male and female members differ, and this also applies to urban farming. The tasks males and females perform in urban cultivation differ according to the cultural group they belong to (Hovorka *et al.*, 2009). In contrast to this, Saptoka (2004) observed that both men and women share many agricultural tasks in urban farming, unlike rural farming where strict gender division

of labour is exercised. This indicates that there are some gender behavioural differences between rural and urban farming.

Hence, this study carried out a gender analysis of urban vegetable production in Ojo Local Government Area, of Lagos State Nigeria. Gender analysis of urban vegetable production is important for policy formulation and programme planning to ensure equity in resource allocation and balanced development that benefits both male and female urban farmers. Specifically, this study;

- i. described the socio-economic characteristics of urban vegetable farmers in the study area;
- ii. examined gender participation in urban vegetable production;
- iii. examined reasons responsible for gender participation in urban vegetable production; and
- iv. identified the constraints faced by male and female in urban vegetable production.

The following hypotheses were tested:

H₀₁: There is no significant relationship between respondents' socio-economic characteristics and their participation in urban vegetable production

H₀₂: There is no significant difference between male and female participation in vegetable production

METHODOLOGY

The study was carried out in Ojo Local Government Area (LGA), Lagos State, Nigeria which is one of the largest LGA in the most populous city in Nigeria. The LGA had a total landmass of 180 sq. km with about 30 percent riverine area (Longe *et al.*, 2009). It is located in the south-eastern part

of the Lagos metropolis and is made up of a complex mix of people from various parts of Nigeria. Many women in the LGA are engaged in petty trading, while a majority of the men are either self-employed artisans or in paid employment.

The population of the study comprise all the vegetable farmers in Ojo LGA, Lagos State, Nigeria. A snowball sampling procedure was used to select the respondents (vegetable farmers). This was used because we could not get a comprehensive list of vegetable farmers in the area, and we had to rely on referrals to recruit respondents. A sample size of 106 respondents (which comprised of 43 males and 63 females) were used for the study.

This study was carried out using a quantitative research method. Primary data for the study were collected from the respondents with the aid of a well-structured questionnaire, which was administered through interview schedule because some of the respondents could not read and write. The questionnaire was divided into four sections to provide answers to all the research objectives. The first section was used to source information on the socio-economic characteristics of the respondents. The second section was used to obtain information about gender participation in urban vegetable production in the study area. The third section was structured to identify the reasons responsible for gender participation in urban vegetable production in the study area. Finally, the last section was used to elicit information on constraints faced by males and females in urban vegetable production.

For the socio-economic characteristics of the respondents, information was retrieved from the respondents on their age, sex,

marital status, level of education, years of vegetable farming, size of farmland, source of labour, annual income, and family size. Fifteen (15) items were used to determine gender participation in Urban Vegetable Production in the area, and it was adapted from Cornish *et al.* (2001) using a 4- Likert rating scale of Always (A); Occasionally (O); Rarely (R) and Never (N). Also, sixteen (16) statements adapted from Edeoghon and Anozie (2015) were used to determine the reasons responsible for gender participation in Urban Vegetable Production by using a 5-Likert rating scale of Strongly Agreed (SA), Agreed (A), Undecided(U), Disagree(SD), and Strongly Disagree(SD). Finally, constraints faced by male and female in Urban Vegetable Production was measured by adapting the 22 items of Brumfield and Ozkan (2016) using a 3-Likert scale of Severe constraint= 3, Mild constraint=2, and Not a constraint =1

The study's objectives were analysed and reported using descriptive statistics such as frequency distribution, percentage, mean and standard deviation. The two hypotheses of the study were tested as follows; the first hypothesis was analysed using Chi-square and Pearson Product Moment Correlation (PPMC), while the second hypothesis was analysed using t-test.

RESULTS AND DISCUSSION

Socio-economic Characteristics of the respondents

Results in Table 1 revealed that more than half (59.4%) of the respondents were female. This implies that females in the study area were more involved in urban vegetable production than males. This could be as a result of the subsistence nature of the venture, where women tend to

participate more than men. This finding is in agreement with Hovorka & Lee-smith (2006) that reported that women tend to dominate the urban farming sector because they are often marginalised in other forms of formal employment in the urban area. There was not much difference between the mean age of the males (Standard Deviation (S.D.) = 8.01) and the females (S.D.= 8.27). This shows that most of the people involved in the urban production of vegetables were still in their productive years. This is similar to Asadu *et al.*, (2014) findings in Imo

State, Nigeria where it was found that the average age of urban crop farmers was 40 years.

Most (72.6%) of the urban vegetable farmers were married and have an average family size of 5. This is similar to the survey findings of Nigeria Demographic and Health Survey (2013), that the average household size in Nigeria comprised about 5 persons. This means that these farmers not only cater for themselves alone but also include several dependents in their immediate family.

TABLE 1: DISTRIBUTION OF THE RESPONDENTS BASED ON THEIR SOCIO-ECONOMIC CHARACTERISTICS (N=106)

Variables	Male (n=43) Frequency (%)	Female (n=63) Frequency (%)	Total (n=106) Frequency (%)
Vegetable farming experience (years)			
≤10	28(65.1)	30(47.6)	58(54.7)
11-20	11(25.6)	28(44.4)	39(36.8)
21-30	4(9.3)	4(6.3)	8(7.5)
Mean±SD	11.05±5.63	11.78±5.61	11.48±5.60
Actual age (years)			
≤35	8(18.6)	10(15.9)	18(17)
36-45	14(32.6)	18(28.6)	32(30.2)
46-55	17(39.5)	29(46)	46(43.4)
56-65	4(9.3)	6(9.5)	10(9.4)
Mean±SD	44.37±8.01	45.31±8.27	44.93±8.15
Marital Status			
Single	4(9.3)	6(9.5)	10(9.4)
Married	36(83.7)	41(65.1)	77(72.6)
Separated	2(4.7)	4(6.3)	6(5.7)
Divorced	1(2.3)	1(1.6)	2(1.9)
Widow/widower	0(0)	11(17.5)	11(10.4)
Size of farmland (hectares)			
≤ 1.5	23(53.5)	60(95.2)	88(83)
1.51 – 3.0	16(37.2)	2(3.2)	12(11.3)
3.01 – 4.5	4(9.3)	1(1.6)	6(5.7)
Mean±SD	1.29±0.62	0.67±0.27	0.97±0.40
Family size			
≤ 3	15(34.9)	15(23.8)	30(28.3)
4 – 6	23(53.5)	35(55.6)	58(54.7)
7 – 10	5(11.6)	13(20.6)	18(17)
Mean±SD	4.23±1.90	4.86±2.09	4.60±2.03
Educational Level			
No formal education	5(11.6)	7(11.1)	12(11.3)
Primary education	9(20.9)	12(19)	21(19.8)
Secondary education	26(60.5)	25(39.7)	51(48.1)
Tertiary education	1(2.3)	17(27)	18(17)
Others (Arabic Education)	2(4.7)	2(3.2)	4(3.8)
Source of farm labour			
Family labour	8(18.6)	16(25.4)	24(22.6)
Hire labour	26(60.5)	27(42.9)	53(50)
Family and hire labour	8(18.6)	19(30.2)	27(25.5)
Communal labour	1(2.3)	1(1.6)	2(1.9)

Source: Field Survey, 2020.

In terms of their farming experiences, many of the males (65.1%) have less than 11 years of vegetable farming experience while about half of the females (50.9%) have at least 11 years of vegetable farming experience. This shows that most of the females were more experienced in vegetable farming. Also, majority of the females (95.2%) in the study area cultivate on farmland less than 1.5 acres while only 54.6 percent of the males cultivate on the same size of farmland. The average farmland cultivated by the female is $\bar{x}=1.17$ which is lower in comparison with that of their male counterparts ($\bar{x}=2.95$). This could be because males are assumed to be more energetic and can cultivate more land. On the other hand, it could be as a result of the inability of females to acquire land. This is not surprising as Chigbu *et al.*, (2019) reported that accessing land is a major limitation women encounter in agriculture in Sub-Sahara Africa. Several empirical studies (Alkire *et al.*, 2013; Fletschner & Kenney, 2014) support this claim that females lack access and control over land. Also, about 27 percent of the urban female vegetable farmers have a tertiary education which is high in comparison with the males where only 2.3 percent possess a tertiary education. This suggests that some of the female farmers have the qualification to take up promising jobs in the formal sector other than small-scale farming. Although, it was not indicated whether they were involved in other formal paid employments and thus makes it difficult to attribute their participation in vegetable farming to lack of employment despite their high educational qualification. Also, many (60.5%) of the farmers indicated that hired labour was their main source of farm labour.

Gender Participation in Urban Vegetable Production

Tillage, seedbed preparation, and sowing were carried out by both males and females (Fig. 1). While activities like spraying ($\bar{x}=3.44$), insect and disease control ($\bar{x}=3.40$), weeding ($\bar{x}=3.10$), finding seed/seedlings ($\bar{x}=3.46$), marketing ($\bar{x}=3.76$), and processing ($\bar{x}=2.83$) were mostly carried out by the females. It can be inferred from this finding that activities like tillage, seedbed preparation, and spraying that are mostly carried out by the males in the rural area are not gender-specific roles in the urban farming sector, hence some age-long gender behaviours in agriculture are changing in urban farming since females are now more involved in activities that require physical strength. This supports the findings of Asadu *et al.* (2014) that cultural beliefs are weaker in the urban region than in rural areas.

It is noteworthy that most of the female farmers harvested vegetables for home use ($\bar{x}=3.14$) while the majority of the males harvested vegetables for sale ($\bar{x}=3.79$) (Fig. 1). This shows that the females were more concerned with the feeding and the nutritional uptake of their families. This corroborates the findings of Duflo (2012) that females invest more than males do in their family's well-being, especially in areas like child's nutrition.

More males than females were involved in storage ($\bar{x}=2.95$ and $\bar{x}=2.68$ respectively) and use of irrigation ($\bar{x}=3.09$ and $\bar{x}=2.62$ respectively). This is likely because setting up irrigation can be capital intensive and most females can barely afford that. From the findings, males make use of mulch ($\bar{x}=2.42$) than females ($\bar{x}=2.27$). This might be the reason why they are not involved in

spraying and weeding like their female counterparts.

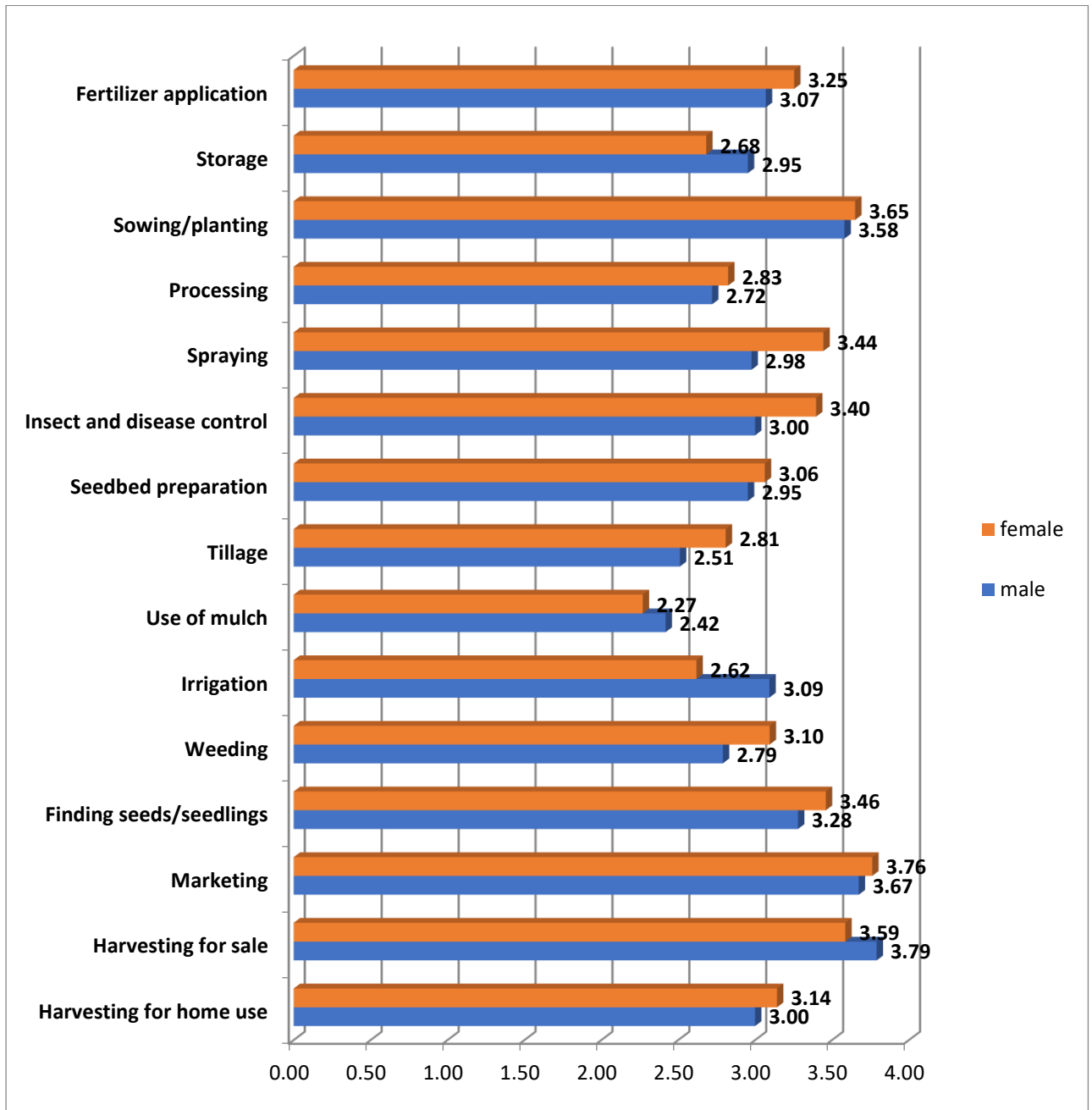


Figure 1: Gender Participation in Urban Vegetable Production

Rating Scale: Always (A)=4; Occasionally (O)=3; Rarely (R)= 2; and Never (N)= 1

Source: Field Survey, 2020.

Reasons Responsible for Gender Participation in Urban Vegetable Production

Table (2) reveals that majority of the males engaged in vegetable farming (\bar{x} = 4.33)

because they enjoy it. Although most of the females also enjoy vegetable farming (\bar{x} = 4.16), the major reason they participate in urban vegetable farming is for them to get fresh food produce and improve their

family's nutrition (\bar{x} =4.27). FAO (2011) have a similar opinion that women, in most societies, have the major role in translating available food into nutrition security in their households, particularly for young children. Notably, both the males and females in the study area agreed that participation in urban vegetable farming provides additional food and enhance household food security.

It is interesting but unsurprising that many males are involved in urban vegetable

production for economic independence and benefit (\bar{x} =4.07). Also, the males indicated that their participation was enhanced because "it benefits them the most" (\bar{x} =4.16). This is different for the females who are more concerned about producing fresh food and improving their household nutrition. Furthermore, more males than females participated in urban vegetable farming mainly because they had no other occupation (\bar{x} =3.84).

TABLE 2: REASONS RESPONSIBLE FOR GENDER PARTICIPATION IN URBAN VEGETABLE PRODUCTION (N=106)

S/No	Perceptual Statements on Reasons Responsible for Gender Participation in Urban Vegetable Production	Mean (\bar{x})		
		Male	Female	Total
1.	I enjoy vegetable farming	4.33	4.16	4.23
2.	Additional food/enhance household food security	4.23	4.19	4.21
3.	Fresh food produce/improved nutrition	4.07	4.27	4.19
4.	I enjoy consuming home-grown vegetables	4.14	4.16	4.15
5.	The need to utilize readily available space	4.19	4.05	4.10
6.	Easy access to market	3.88	3.97	3.93
7.	It is environmentally friendly	3.95	3.92	3.93
8.	Save money on food expenditure (earn and/or save some income)	3.98	3.78	3.86
9.	It benefits me the most	4.16	3.63	3.85
10.	Had no other occupation	3.84	3.59	3.69
11.	Economic independence/ benefit	4.07	3.29	3.60
12.	Custom/tradition/farming background	3.60	3.25	3.40
13.	Has technical knowledge	3.30	3.19	3.24
14.	Diversify income/investment opportunity	3.47	3.00	3.19
15.	It relates to other responsibilities	3.19	2.84	2.98
16.	Mobility and dominance of the public space	3.30	2.75	2.97

Source: Field Survey, 2020.

(Rating Scale: Strongly Agree (SA)=5; Agree (A)=4; Undecided (U)=3; Disagree (D)=2; and Strongly Disagree (SD)=1)

Constraints Faced by Male and Female in Urban Vegetable Production

Constraints encountered by both the males and females in urban vegetable production are similar. They both indicated high input costs (\bar{x} = 2.72; \bar{x} = 2.71), pests and diseases (\bar{x} = 2.67; \bar{x} = 2.54), lack of funds (\bar{x} = 2.58; \bar{x} = 2.54), and insufficient/unreliable rainfall (\bar{x} = 2.60; \bar{x} = 2.40) as their major

challenges (Table 3). Stating insufficient rainfall as a major problem is not surprising because most of the crop cultivation done in Nigeria is heavily reliant on rainfall due to the financial inability to set up an irrigation system. This supports (Olayide *et al.*, 2016) that farming in Nigeria relies mostly on rain. The least challenges indicated by both genders (male and female

respectively) are also similar; these include waterlogging ($\bar{x} = 2.21$; $\bar{x} = 1.86$) as well as

vegetable and soil contamination ($\bar{x} = 2.26$; $\bar{x} = 1.97$)

TABLE 3: CONSTRAINTS FACED BY MALE AND FEMALE IN URBAN VEGETABLE PRODUCTION (N=106)

Statements	Male				Female			
	SC	MC	NC	\bar{x}	SC	MC	NC	\bar{x}
High cost of input costs	31(72.1)	12(27.9)	-	2.72	46(73)	16(25.4)	1(1.6)	2.71
Pests and diseases	30(69.8)	12(27.9)	1(2.3)	2.67	35(55.6)	27(42.9)	1(1.6)	2.54
Inadequate	25(58.1)	18(41.9)	-	2.58	36(57.1)	25(39.7)	2(3.2)	2.54
Insufficient/unreliable rainfall	28(65.1)	14(32.6)	1(2.3)	2.63	28(44.4)	29(46)	6(9.5)	2.35
Diseases	29(67.4)	12(27.9)	2(4.7)	2.63	26(41.3)	29(46)	8(12.7)	2.29
Poor access roads	28(65.1)	14(32.6)	1(2.3)	2.63	23(36.5)	33(52.4)	7(11.1)	2.25
Theft of vegetable	20(46.5)	19(44.2)	4(9.3)	2.37	34(54)	17(27)	12(19)	2.35
Inadequate access to farmland to cultivate	24(55.8)	15(34.9)	4(9.3)	2.47	22(34.9)	34(54)	7(11.1)	2.24
Low market prices	15(34.9)	23(53.5)	5(11.6)	2.23	32(50.8)	23(36.5)	8(12.7)	2.38
limited market places	26(60.5)	10(23.3)	7(16.3)	2.44	27(42.9)	24(38.1)	12(19)	2.24
Poor land quality	23(53.5)	18(41.9)	2(4.7)	2.49	20(31.7)	35(55.6)	8(12.7)	2.19
lack of good seeds	30(69.8)	11(25.6)	2(4.7)	2.65	18(28.6)	31(49.2)	14(22.2)	2.06
Labour shortage	22(51.2)	18(41.9)	3(7)	2.44	13(20.6)	46(73)	4(6.3)	2.14
Insecurity of tenure	13(30.2)	23(53.5)	7(16.3)	2.14	25(39.7)	31(49.2)	7(11.1)	2.29
Lack of access to water	11(25.6)	28(65.1)	4(9.3)	2.16	24(38.1)	31(49.2)	8(12.7)	2.25
Destruction of vegetable	14(32.6)	24(55.8)	5(11.6)	2.21	24(38.1)	23(36.5)	16(25.4)	2.13
Neighbour begging for vegetable	17(39.5)	17(39.5)	9(20.9)	2.19	20(31.7)	30(47.6)	13(20.6)	2.11
Inadequate strength	18(41.9)	11(25.6)	14(32.6)	2.09	18(28.6)	36(57.1)	9(14.3)	2.14
Inadequate farming skills	13(30.2)	21(48.8)	9(20.9)	2.09	22(34.9)	28(44.4)	13(20.6)	2.14
Water logging	14(32.6)	24(55.8)	5(11.6)	2.21	12(19)	30(47.6)	21(33.3)	1.86
problematic consumer relations	11(25.6)	24(55.8)	8(18.6)	2.07	13(20.6)	28(44.4)	22(34.9)	1.86
vegetable and soil contamination	15(34.9)	24(55.8)	4(9.3)	2.26	23(36.5)	15(23.8)	25(39.7)	1.97

Source: Field Survey, 2020.

SC (Severe Constraint) = 3, MC (Mild Constraint) =2, NC (Not a Constraint) =1

Test of Association/Relationship between Respondents’ Socio-economic Characteristics and their Participation in Urban Vegetable Production

Findings revealed a significant association ($p < 0.05$) between the source of farm labour

($\chi^2 = 18.38$, $df = 3$) and their participation in urban vegetable production. This implies that the source of farm labour of the respondents influenced their participation in urban vegetable production.

TABLE 4: TEST OF ASSOCIATION BETWEEN RESPONDENTS’ SOCIO-ECONOMIC CHARACTERISTICS AND THEIR PARTICIPATION IN URBAN VEGETABLE PRODUCTION USING CHI-SQUARE

Variables	χ^2	df	p-Value	Decision
Sex	0.22	1	0.64	Not Significant
Marital Status	2.31	4	0.68	Not Significant
Educational level	3.21	4	0.52	Not Significant
Source of farm labour	18.38	3	0.00	Significant

Source: Field survey, 2020.

p-Value is significant at 0.05 level (2 tailed)

Furthermore, the years of vegetable farming experience ($r = -0.22$) and family size ($r = -0.26$) have a significant negative relationship ($p < 0.05$) with their participation in urban vegetable production (Table 5). This infers that vegetable

farming experience and family size had an inverse influence on their participation in urban vegetable production. That is, when vegetable farming experience and family size increase, their participation will decrease and vice-versa.

TABLE 5: TEST OF RELATIONSHIP BETWEEN RESPONDENTS’ SOCIO-ECONOMIC CHARACTERISTICS AND THEIR PARTICIPATION IN URBAN VEGETABLE PRODUCTION USING PPMC

Variables	R	p-Value	Decision
Age	0.04	0.71	Not Significant
Vegetable farming experience	-0.22	0.02	Significant
Size of farmland	0.02	0.85	Not Significant
Family size	-0.26	0.00	Significant

Source: Field survey, 2020.

P-value is significant at 0.05 level (2 tailed)

Table 6 shows that there is a significant difference ($p < 0.05$) between male and female participation in vegetable production ($t = 1.05$). This shows that

although both males and females engage in vegetable production, their mode of participation differs.

TABLE 6: TEST OF SIGNIFICANT DIFFERENCE BETWEEN MALE AND FEMALE PARTICIPATION IN VEGETABLE PRODUCTION USING T-TEST

Variable	Gender	N	Mean	SD	t-value	Sig.	Decision
Participation in urban vegetable production	Male	43	45.81	4.43	1.05	0.00	Significant
	Female	63	47.06	6.92			

CONCLUSION AND RECOMMENDATIONS

Unlike most rural communities where there are more defined gender roles in farming, the case is different in the urban area.

Females are engaged in activities that are majorly attributed to males. Activities such as tillage, seedbed preparation, and sowing were carried out by both genders. This means some culturally confined gender

behaviours in agriculture are changing in the urban farm setting. It is also noteworthy that the reason for engaging in vegetable production is quite different across both genders. For the males, the main reason for engaging in urban vegetable farming for male is because they enjoy it, while the females participate majorly to get fresh food produce and improve their family nutrition. Hence, government and other important stakeholders must know that what will motivate farmers to keep supplying nutritionally adequate and safe vegetables to city residents will be different as well.

Furthermore, the challenges that impede participation in the urban cultivation of vegetable is similar among the males and females. Therefore, equal preference and well-tailored solutions should be given in addressing the challenges encountered by the urban vegetable producers irrespective of their genders for inclusive and sustainable growth. Importantly, interventions that will ensure the availability and affordability of farm inputs for farmers should be made carried out by both government and non-government organisations. Also, the development of pest and diseases resistant vegetable varieties should be prioritised by research institute. Finally, providing credit to urban vegetable farmers will help to curb the challenge of lack of fund they encounter. All of these would significantly increase their productivity and lead to improved food and nutrition security.

REFERENCES

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013). The Women's Empowerment in Agriculture Index.

World Development, 52, 71–91. <https://doi.org/10.1016/j.worlddev.2013.06.007>

Asadu, A., Egbujor, C., Chah, J., & Ifejika, P. (2014). Gender Roles in Urban Crop Production in Imo State, Nigeria. *Journal of Agricultural Extension*, 17(2),1. <https://doi.org/10.4314/jae.v17i2.1>

Brumfield, R. G., & Ozkan, B. (2016). Gender analysis of labor and resources in greenhouse vegetable production in the Antalya Province of Turkey. *HortScience*, 51(12), 1547–1554. <https://doi.org/10.21273/HORTSCI11071-16>

Chigbu, U. E., Paradza, G., & Dachaga, W. (2019). Differentiations in women's land tenure experiences: Implications for women's land access and tenure security in sub-saharan Africa. *Land*, 8(2),1–21. <https://doi.org/10.3390/land8020022>

Cornish, G. a., Aidoo, J. B., & Ayamba, I. (2001). Informal irrigation in the peri-urban zone of Kumasi, Ghana-an analysis of farmer activity and productivity. *HR Wallingford, Report OD/TN 103*, 1–86.

Dubbeling, M., Zeeuw, H., & Veenhuizen, R. (2010). Cities, poverty and food: multi-stakeholder policy and planning in urban agriculture. *Cities Poverty and Food Multistakeholder Policy and Planning in Urban Agriculture*.

Duflo, E. (2012). Women's empowerment and economic development. *The ANNALS of the American Academy of Political and Social Science*, 554, 1–47. <https://doi.org/10.1257/jel.50.4.1051>

Edeoghon, C. O., & Anozie, O. (2015). Urban Women Participation In

- Vegetable Gardening In Ondo Senatorial District Of Ondo State, Nigeria. *Nigerian Journal of Rural Sociology*, 16(2), 65–72.
- Eigenbrod, C., & Gruda, N. (2015). Urban vegetable for food security in cities. A review. *Agronomy for Sustainable Development*, 35(2), 483–498. <https://doi.org/10.1007/s13593-014-0273-y>
- FAO. (1996). The State of Food and Agriculture 1996. In *Agricultural and Development Economics Working Papers - 29*.
- Fletschner, D., & Kenney, L. (2014). Rural women's access to financial services: Credit, savings, and insurance. *Gender in Agriculture: Closing the Knowledge Gap*, 11, 187–208. https://doi.org/10.1007/978-94-017-8616-4_8
- Folayimi, O.-O., Olayinka, T. J., & Kayode, O. I. (2019). Resources Use Efficiency Among Urban Vegetable Farmers In Ogbomoso Agricultural Zone Area of Oyo State, Nigeria. *International Journal of Economics and Management Studies*, 6(7), 72–77. <https://doi.org/10.14445/23939125/ijems-v6i7p111>
- Food and Agriculture Organization of the United Nations. (2011). Policy Roundtable: Gender, Food Security and Nutrition. In *Committee on World Food Security: Policy Roundtable Gender, Food Security And Nutrition*. <http://www.fao.org/docrep/meeting/023/mc065E.pdf>
- Hovorka, A., De Zeeuw, H., & Njenga, M. (2009). Women Feeding Cities: Mainstreaming Gender in Urban Agriculture and Food Security. In *Practical Action, London*.
- Hovorka, A. J., & Lee-smith, D. (2006). Gendering the Urban Agriculture Agenda 1. *Cities Farming for the Future; Urban Agriculture for Green and Productive Cities*.
- Longe, E., Ukpebor, E., & Omole, D. (2009). Household Waste Collection and Disposal: Ojo Local Government Case Study, Lagos State, Nigeria. *Journal of Engineering Research*, 14(4), 1–12.
- Mok, H. F., Williamson, V. G., Grove, J. R., Burry, K., Barker, S. F., & Hamilton, A. J. (2014). Strawberry fields forever? Urban agriculture in developed countries: A review. In *Agronomy for Sustainable Development*. <https://doi.org/10.1007/s13593-013-0156-7>
- Nigeria Demographic and Health Survey. (2013). *NDHS 2013 Demographic and Health survey, Key Findings*.
- Olayide, O. E., Tetteh, I. K., & Popoola, L. (2016). Differential impacts of rainfall and irrigation on agricultural production in Nigeria: Any lessons for climate-smart agriculture? *Agricultural Water Management*. <https://doi.org/10.1016/j.agwat.2016.08.034>
- Orsini, F., Kahane, R., Nono-Womdim, R., & Gianquinto, G. (2013). Urban agriculture in the developing world: A review. In *Agronomy for Sustainable Development*. <https://doi.org/10.1007/s13593-013-0143-z>
- Saptoka, K. (2004). Gender perspectives on peri-urban agriculture in Nepal. *Urban Agriculture Magazine*, 12, 38–39.