



HOME GARDEN PRACTICES AMONG UNIVERSITY STAFF IN ONDO STATE, NIGERIA

Ibidapo, I.

Department of Agricultural Science, Adeyemi Federal University of Education, Ondo

Corresponding Author's E-mail: ibidapo68@gmail.com, **GSM:** +2348032282432,

<https://orcid.org/0009-0006-6725-4234>

ABSTRACT

Home garden practices among universities staff in Ondo state was examined and a multistage sampling procedure through a purposive selection of universities was used to select 124 respondents for the study. Information was elicited from respondents with the aid of experts' validated structured questionnaire. The questionnaire was used to collect primary data from respondents on socio-economic characteristics, crops planted and challenges of home garden practices. Descriptive statistics, t-test of independent samples and probit regression were the analytical tools employed for data analysis. Results revealed that the mean age of respondents was 43.6 ± 4.7 years, 62.9% were male with 78.2% married and average years of experience of 12.5 ± 3.8 years in home garden practices. The probit regression analysis indicated that age of staff, level of education, household size, farm size, income, availability of labour, and access to land and farm inputs significantly influenced the probability of staff engagement in home garden practices. The t-test of independent sample revealed that more male ($t = 3.266$; $df = 122$; $p < 0.05$) and non-academic staff ($t = 2.046$; $df = 122$; $p < 0.05$) engaged in home garden practices at 5% level of significance. Constraints facing university staff engaging in home garden practices included; stealing of crops (89.5%), animal invasion (63.7%) and pest infestation (70.2%), poor yield (79.0%), among others. It was discovered that home garden enhanced access to food thus promotes food diversity and fresh vegetables in households. It was recommended based on the findings that university staff should be encouraged in home garden practices, and access to farm inputs should be encouraged for sustainable home garden practices in the universities.

Keywords: Home, Garden, Academic, Staff, University, Livelihoods.

INTRODUCTION

In Nigerian urban and peri-urban communities, home garden have grown to be a significant source of income and a strategy for ensuring food security. However, among households in universities communities, home garden engagement by the households has been a source of fruits, vegetables, spices, and medicinal plants thus enhances nutritional wellbeing, supplement food intake, and earn extra money (Oladele *et al.*, 2020). Participation in home garden activities has been further stimulated by rising food prices, fast urbanisation, and the need for sustainable household food systems (Ibidapo & Fasakin, 2022). However, there are a number of reasons why household participation in home garden varies, including institutional and socioeconomic characteristics that are prevalent at various universities, such as the availability of agricultural land inside the institutions, land allocation policies, and environmental conditions (Adeosun *et al.*, 2020). Furthermore, staff members in the universities are limited in the knowledge of the benefits and significance of home garden practices on the households among university staff.

The practice of cultivating a small plot or piece of undeveloped ground surrounding our homes, dwellings, or homesteads is known as home gardening. It involves keeping livestock and producing a variety of crops to give the family several sources of food and income or cash. Home garden has been widely recognized to be practiced in different settings by both men and women in communities, towns and villages on a small-scale basis by the households both in the rural, peri-urban and urban areas in developing countries (Gwacela *et al.*, 2024). According to Galhena *et al.* (2013), home garden is the practice of peri-urban and local communities with limited resources cultivating a small area of land within walking distance of the family home. In underdeveloped nations, family farming and the local



food system relied heavily on home gardens (Saediman *et al.*, 2021). Both men and women in rural and urban regions rely on home gardens as means of livelihoods and empowerment in the households. Ibrahim *et al.* (2019) indicated that men were more involved in-home gardening than women however it's unclear whether there are gender differences in home garden participation in the study area. Gwacela *et al.* (2024) stated that home garden guides against food insecurity and nutritional diversity for the household thus making the practice to be of importance to the households within the university communities.

Several research works have been conducted on home garden, for instance, Saediman *et al.* (2021) indicated that home garden comprised the cultivation of small plots of land around the homestead as family farm, kitchen or backyard garden to supply varieties of crops and vegetables. Home garden serves as sources of food, vegetables to enhance food security and nutritional diversity in the households. According to Adeosun *et al.* (2020) home garden could be practiced on self-owned, borrowed land or around ones residence such as a vacant plot of land closed the home or marginal land along the road around homes. Home garden could be prominently employed in the cultivation of fruit and food crops such as banana, cassava, sweet potatoes, cocoyam, yam and vegetables and it helps to increase food production (Ibrahim *et al.*, 2019). Despite the significance of home garden on the households, many households face challenges such as limited access to land space, inadequate capital, lack of technical knowledge, and insufficient availability of improved planting materials.

Home garden has been reported to be beneficial as it helps to make available more fresh fruits and vegetables for the households and control the use of fertilizer and pesticides. Home garden provides a diversity of fresh foods that improve the quantity and quality of nutrients available to the family, supply of vegetables and animal protein (Zerihun *et al.*, 2011; Ibrahim *et al.*, 2019; Gwacela *et al.*, 2024). However, despite the advantages of participation in home garden on the rural and urban households, there are limited empirical attentions on participation in home garden among university staff in the tertiary institution environments or communities. Hence, the need to investigate university staff participation in home garden practices in the study area. Findings of this study will assist policymakers, agricultural extension agents, and institutional management in designing programmes and policies that encourage household engagement in home garden practices. Hence, the study examined the socio-economic characteristics of university staff engagement in home garden practices, identified crops planted in home garden practices by households; identified the constraints affecting households' participation in home garden and determined factors influencing university staff participation in home garden in the study area.

METHODOLOGY

The Study Area

The study was carried out among the staff of tertiary institutions in Ondo State, Nigeria. The state has 8 universities with 5 public and 3 private universities. The state lies on a bearing of latitude $5^{\circ} 45^1$ and $8^{\circ} 15^1$ North and longitude $4^{\circ} 45^1$ and 6° East of the equator. Ondo state experiences two major climatic periods; the dry season from November to March and the rainy season occurs between April and October of every year. The temperature of the study area ranges between 21°C to 34°C with average annual rainfall 1100mm and 2400mm per annum. Ondo State has boundaries with Osun and Ogun States to the west and Ekiti and Kogi States in Northern part while the state shares boundaries eastward with Delta and Edo States and Atlantic Oceans borders the state to the South. The state is characterized by the mangrove swamp forest, rain forest whilst the guinea savannah is at the northern part of the state. The population for the study comprised university staff residing within and around the university community, including staff quarters and neighboring residential areas where home garden activities are practiced.

Sampling Techniques and Sample Size

The multistage sampling procedure was employed for the study. In the first stage, two universities (Adeyemi Federal University of Education, Ondo and Federal University of Technology, Akure) with residential quarters within and around the university community were purposively selected. This is based on the prevalence of having residential quarters in the universities and the staff engaged



in home garden practices. In the second stage, snowball-cum-complete enumeration was used to select university staff or households participating in home garden activities. Finally, a total sample size of 124 university staff engaging in home garden was used for the study.

Methods of Data Collection

The primary data for the study were collected through the administration of a structured questionnaire. The questionnaire was face and content validated by experts in agricultural economics and the reliability was determined for the internal consistency of the instrument. Information gathered included; socio-economic features, types of crops planted, constraints affecting participation and factors influencing staff participation in home garden activities

Analytical Techniques

The descriptive statistics (such and standard deviation, percentages) independent sample t-test and probit regression analysis. The probit regression model was used to determine factors influencing university staff participation in home garden practices. The model is specified as:

$$Y_i^* = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k + \varepsilon \dots\dots\dots(1)$$

$$\text{where } Y_i = \begin{cases} 1 & \text{if } Y_i^* > 0 \text{ (if staff participates in home garden practices)} \\ 0 & \text{if } Y_i^* \leq 0 \text{ (if otherwise)} \end{cases}$$

The probability of participation is expressed as:

$$P(Y_i = 1|X) = \phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k) \dots\dots\dots(2)$$

Where ϕ = cumulative distribution function (CDF) of the standard normal distribution

$P(Y_i = 1|X)$ = Probability that a staff engages in home garden practices

Y = Participation in home garden practices (1 = Participates, 0 = otherwise); X_1 = Age of household head (years); X_2 = gender (1 = male; 0 = otherwise); X_3 = household size (numbers); X_4 = education status (years of schooling); X_5 = monthly income (₦); X_6 = Access to land (1 = yes; 0 = no); X_7 = access to inputs (1 = yes; 0 = no); X_8 = home garden experience (years); X_9 = availability of labour (1 = yes; 0 = no); X_{10} = access to security (1 = yes; 0 = no); ε = error term.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents in Home Garden

The results of the socio-economic characteristics of the respondents (Table 1) revealed that 62.9% were male while 37.1% accounted for the female. This indicated that larger percentage of the population was dominated by male university staff. This aligns with Uzokwe *et al.* (2016) and Oladele *et al.* (2020) that reported the involvement of more male participation in home garden practices in Kaduna state, Nigeria. Respondents mean age was 43.6±4.7 years with 54.8% accounted for age bracket of 31 – 45 years. This indicates the staff engaging in home garden are still economically active and with physical strength for their productivity in home garden. This is similar with Banmeke and Ajayi (2009) who reported respondents' with age bracket of between 41 -50 years.

On marital status, finding showed that 54.8% of the staff is married. This showed that in the study area, majority of the respondents were married and that being married enhanced adequate care for the family. This is similar to Banmeke and Ajayi (2009) that reported 74.7% married home gardeners in Edo State. The mean household size was 4.0±2.0 members. This is less than the average national household size of 5 members however; this will enhance available labour supply for home garden activities. The educational attainment of staff engaging in home garden indicated that, 71.7% accounted for tertiary education. This suggests that majority of the respondent were educated, and within the university environment, hence, this could enhance access to information and inputs through the extension agents and Agricultural Development Agents arm of government ministry. This agrees with Uzokwe *et al.* (2016) who reported 56.9% of respondents with higher educational attainment contrary to Oladele *et al.* (2016) who reported 50.0% of respondents with secondary education.

On category of universities staff participating on home garden, 54.7% were non-academic staff as against 45.3% academic staff. This suggests that both academic staff and non-academic staff engage in home garden in the selected institutions, however, more non-academic staff engaged in home garden practices. This aligns with Adeosun *et al.* (2020). Furthermore, finding revealed the mean years of



university staff involvement in home garden was 12.5 ± 3.8 years. This indicates more years of experience could lead to better performance and productivity in home garden. This is similar to Banmeke and Ajayi (2009) who reported that more respondents had above 16 years of experience of engagement in home garden practices in Edo state, Nigeria.

Table 1: Distribution by University Staff based on Socio-Economic Characteristics (n = 124)

Variables	Frequency	Percentage (%)
Sex		
Female	46	37.1
Male	78	62.9
Age		
< 31	30	24.2
31 – 45	68	54.8
46 – 60	15	12.1
>60	11	8.9
Mean/SD	43.6 $\pm$ 4.7	
Marital Status		
Single	10	8.1
Married	97	78.2
Widowed	11	8.9
Divorced/Separated	6	4.8
Household Size		
< 3	39	31.5
3-5	69	55.6
>5	16	12.9
Mean/SD	4.0 $\pm$ 2.0	
Education Status		
Primary education	9	7.2
Secondary education	11	8.9
Tertiary education	89	71.8
No formal education	15	12.1
Category of Staff		
Academic Staff	56	45.3
Non-academic Staff	68	54.7
Years of Experience		
< 8	23	18.6
8 – 10	37	29.8
>10	64	51.6
Mean/SD	12.5 $\pm$ 3.8	

Source: Field Survey, 2024

Distributions of Respondents by Crops Planted in Home Garden

The results on Table 2 show the various crops planted by university staff households participating in home garden among in the study area. Results indicated that vegetables such as pumpkin (96.8%), amaranths (96.1%), tomatoes (90.3%), among others are the widely cultivated crops in the selected study location. This may be attributed to the need for the households to access fresh and nutritious food crops for health living within the households. This finding supports Guitart *et al.* (2012) and Gray *et al.* (2014) submissions that home garden provides varieties of vegetables and fruits and nutritive foods that meet household's food and nutrition security, improvement of health and income generation. The study further revealed that maize, yam, cassava, cocoyam, among other crops (Table 2) were also cultivated in home garden by university staff. This helps to provide sources of food thus help to curb food insecurity, hunger and malnutrition among home garden practitioners' households.



This concurs with Saediman *et al.* (2021) who reported food security as one of the cardinal goals of home garden in the rural areas of the developing countries. Uzokwe *et al.* (2016) also indicated that food and vegetables are the major crops cultivated among home gardeners to guide against food insecurity and hungers in the participating households. Hence, the importance of home garden in the households cannot be overemphasized as it supply fresh fruits and vegetables, generate incomes and serves as means of livelihoods to the people.

Table 2: Distributions of Respondents by Crops Planted in Home Garden (n = 124)

Variables	Frequency**	Percentage (%)
Maize	114	91.9
Yam	109	87.9
Cassava	118	95.2
Cocoyam	98	79.0
Plantain	89	71.8
Vegetables:		
Amaranth	119	96.1
Pumpkin (<i>Telfaria</i>)	120	96.8
Tomatoes	112	90.3
Okra	101	81.5

Source: Field Survey, 2024 ** multiple responses

Distributions of Respondents by Constraints in Home Garden

On the constraints encountered in home garden practices (Table 3) by university staff showed that stealing/theft of crops or farm produce was the highest challenge and it accounted for 89.5% and was ranked 1st, this could be attributable to insecurity and the farm being within the university environment or community with wide students access. Other challenges included; inadequate capital (87.1% (2nd), poor access to inputs (82.3% and ranked 3rd), inadequate farmland (81.5% (4th), among others. This implies that home garden practitioners are constrained by myriads of challenges and this significantly impacted productivity and development of home garden practices. This finding is similar to Adeola and Goerge (2020) that identified inadequate farmland, low yield, high cost of inputs, and shortage of labour, pests and diseases problems, as parts of the major challenges constraining home garden practices in Nigeria. This is also in agreement with Lin *et al.* (2017) who submitted similar factors as barriers to home garden practices. Oladele *et al.* (2020) indicated that lack of farm inputs, capital pests and diseases among other problems were the challenges hindering home garden practices in Kaduna state, Nigeria. Moreover, Galhena *et al.* (2023) noted that poor access to climate information, inputs and markets, poor environmental conditions and soil fertility, and excessive post-harvest losses affect home garden practices. This implies that home garden practices like the main farming practices is confronted with serious challenges that affect income generation, food security and post-harvest losses.

Table 3: Distributions of Respondents by Constraints in Home Garden (n = 124)

Variables	Frequency**	Percentage (%)	Rank
Inadequate farmland	101	81.5	4 th
Inadequate capital/finance	108	87.1	2 nd
Poor access to inputs	102	82.3	3 rd
Natural hazards/Climate change	85	68.5	8 th
Low productivity/yield	98	79.0	5 th
Shortage of labour	95	76.6	6 th
Stealing or theft of crops/livestock	111	89.5	1 st
Animal invasion of farm	79	63.7	9 th
Pest and disease infestation	87	70.2	7 th
Environmental pollution	76	61.3	10 th

Source: Field Survey, 2024 ** multiple responses



Factors Influencing University Staff Participation in Home Garden

The results (Table 5) of the probit regression estimates revealed that the likelihood ratio chi-square statistics was 167.85, the log likelihood was -118.0578 and significant at 1%, suggesting that the model has a strong explanatory power. The Pseudo R^2 was 0.5549 indicating that the specification fits the data well and the hypothesized variables in the model are able to explain 55.5% of the variations in the university staff decision to engage in home garden practices. Table 5 showed that household size, access to land and input, and availability of hired labour positively influence university staff engagement in home garden while age, age square, marital and education status negatively influence university staff engagement in home garden.

Age and age squared (age^2) were statistically significant with negative relationship with home gardening practices at 5% probability level. This indicates that a unit increase in age and advanced age reduces the probability of university staff engagement in home garden practices by a marginal value of 6.4% and 8.9%, respectively. This is however at variance with Adeosun *et al.* (2020) who reported insignificant relationship between age and participation in home garden in Enugu State. Moreover, at intermediate age (age squared), physical strength of staff declines and participation in strenuous activities diminishes.

Marital status of the garden farmers was reported to have significant negative influence on home garden participation among university staff in Ondo State. The finding showed that being married had negative coefficient in relation to participation in home garden at 5% degree of significance which indicates being married reduces engagement in home garden by 7.1%. This negative significance portends many responsibilities in at home with less time for home garden or married individuals may engage in off-farm or wage activities that reduces the available time for home garden. This concurs with Adeola and George (2020) with similar finding that household with more females' are likely to participate less in home garden practices. Household size showed positive coefficient and significantly influenced university staff engagement in home garden practices at 5% level of significance. This suggests that a unit increase in family size increases engagement in home garden practices among the university staff by 8.9%. This finding suggests that households with more members are more likely to engage in home garden than households with fewer members due to greater opportunities of sharing garden tasks and reduction in the demand for hired labour (Nkegbe *et al.*, 2022). This is similar to finding by Osmani and Hossain (2015) who reported that increase in household size increases market participation decisions of smallholder farmers.

The education status of university staff was negative and significantly influenced household's home garden practices at 5% probability level. This means that a unit increase in years of schooling by university staff reduces likely involvement in home garden practices by a marginal value of 4.3%. Access to land and inputs had positive coefficients and are significantly related to participation in home garden at 1% and 5% probability levels. This shows that having access to land and inputs increases the probability of staff engagement in home garden practices by marginal values of 9.5% and 4.8%, respectively. This supports the assertion by Galhena *et al.* (2013) and Oladele *et al.* (2020) that lack of access to land and inputs hinders staff participation in home garden. Availability of labour is an important asset in agricultural production. The coefficient of labour availability was significant and positively related to participation in home garden at 1% probability level. This indicates that opportunity for hired labour enhances the probability of staff involvement in home garden by 14.4%. This implies that with opportunity to hire labour staff can engage labour for home garden activities for payment in returns for the services on the farm.

Table 5: Factors Influencing University Staff Participation in Home Garden

Variables	Coefficient	p>/z/	$\frac{dy}{dx}$
Age of household head (years)	-0.289(0.165)	0.040**	-0.064
Age squared (age^2)	-0.366(0.193)	0.052**	-0.080
Gender (1 = male; 0 = otherwise)	-0.149(0.138)	0.281	-0.033
Marital status (1 = married; 0 = otherwise)	-0.324(0.154)	0.036**	-0.071
Household size (numbers)	0.405(0.172)	0.019**	0.089
Education status (years of schooling)	-0.334(0.171)	0.051**	-0.043
Monthly income (₦)	0.198(0.258)	0.443	0.044
Access to land (I = yes; 0 = no)	0.441(0.155)	0.005***	0.095
Experience in home garden (years)	0.192(0.152)	0.206	0.042
Access to inputs (I = yes; 0 = no)	0.431(0.209)	0.040**	0.048
Availability of hired labour (1 = yes; 0 = no)	0.654(0.148)	0.000***	0.144
Access to security (I = yes; 0 = no)	0.086(0.117)	0.464	0.019
Constant	14.425(3.573)	0.000	
Observation	124		
Log likelihood	-118.0578		
LR χ^2	167.85		
Prob > χ^2	0.000		
Pseudo R^2	0.5549		

Source: Author's Computation, 2024 ***, and ** significant at 1% and 5%

Independent Sample t-test Analysis of Gender and Category of University Staff

Result on (Table 5) shows a calculated t-value of 3.266 and a p-value of 0.001 testing at 5% alpha level of significance. It shows that the calculated p-value is less than the alpha value of 0.05, therefore, the null hypothesis which states that, there is no significant difference of between male and female university staff engagement in home garden is rejected. Consequently, there is a significant difference gender difference in university staff participation in home garden. This indicates that male staff involvement in home garden practices is more pronounced than the female in the selected university in Ondo State. This could be adduced to several factors such as the prevalence of more male lecturers, gender related norms, socio-cultural and female staff engagement in households chores unlike male lectures, among others.

On whether there is significant difference in the category of university staff engaging in home garden, finding on (Table 5) shows a calculated t-value of 2.046 and a p-value of 0.042, testing at 5% alpha level of significance. Hence, since the calculated p-value is less than the alpha value at 5% level of significance, therefore the null hypothesis which states that, there is no significant difference of between male and female university staff involvement in home garden is rejected. Consequently, there is a significant difference between the academic and non-academic staff participating in home garden activities to the advantage of non-academic staff. It implies that more non-academic staff of the university is participating in home garden compared to the academic staff in the study area. This could be attributable to the academic work loads and lack of hired labour that could be used by the academic staff in home garden activities.

Table 5: Independent Sample t-test Analysis of Gender and Category of University Staff Participation in Home Garden

Variables	N	Mean ($\bar{x}$)	Std. Deviation	df	t	Sig. (2-tailed)
Gender						
Male	78	24.59	2.55	122	3.266	0.001
Female	46	23.64	2.64			
Staff Category						
Academic Staff	56	24.30	2.27	122	2.046	0.042
Non Academic Staff	68	23.77	2.37			

Source: Author's Computation, 2024



CONCLUSION AND RECOMMENDATIONS

The study assessed university staff participation in home garden practices with specific objective on determining factors influencing university staff participation in home garden in Ondo State, Nigeria. The study revealed that home garden enhanced household food supply, income supplementation, and nutritional improvement. It was discovered that households with better access to land, higher income, and labour participate actively in-home garden practices. Common crops planted by home gardeners included; vegetables, maize, yam, cassava, plantain, among others. Moreover, the study revealed that home garden is constrained by inadequate land space, insufficient capital, poor access to improved planting materials/inputs, and labour shortage. Findings also showed that, age, household size, educational status, availability of land and labour significantly influenced university staff households' participation in home garden activities. Results also indicate significant gender difference to the favour of male university staff while difference in category of staff was tailored towards non-academic staff. The following recommendation were made based on the findings of the study;

- i. There should be awareness campaigns to educate households on home garden practices in the university community.
- ii. The university management should provide designated land spaces and support programmes that encourage staff engagement in home garden practices within the university community.
- iii. Accessible credit facilities and soft loans should be made available for home garden activities practitioners.
- iv. Improved seedlings, planting materials and other agricultural inputs should be made available and affordable to encourage participation in home garden practices.
- v. Households should maximize the available vacant land around their homes for small-scale vegetables and medicinal plants cultivation to enhance food security and nutritional wellbeing among university staff in the tertiary institution communities.

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