TRAINING NEEDS OF SMALLHOLDER VEGETABLE FARMERS IN URBAN-FARM CLUSTERS OF LAGOS STATE, NIGERIA

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ABSTRACT

Food production in and around cities is an integral part of the urban fabric. The study investigated the training needs of smallholder vegetable farmers in urban-farm clusters of Lagos State, Nigeria. A multi-stage sampling procedure was deployed, and a total of eighty-six respondents were sampled. The study revealed that the majority were male (82.6%), middle-aged ($\bar{x} = 49 \pm 9.45$ years) and had spent ($\bar{x} = 18.07 \pm 7.76$ years) as duration on the enterprise. Hired labour was mostly sourced (55.8%) while leasehold (66.3%) and farm gate (52.5%) was the prominent modes of land tenure practiced and source of market for produce, respectively. Income generation ($\bar{x} = 1.87$) and source of employment ($\bar{x} = 1.83$) ranked highest as perceived prospects of vegetable farming in urban farm-clusters. Testing for seed viability ($\bar{x} = 2.69$), seed treatment ($\bar{x} = 2.64$), and pest and disease control ($\bar{x} = 2.73$) ranked highest for pre-planting, planting, and post-planting activities, respectively. Non-recognition by government institutions. ($\bar{x} = 1.93$), inadequate capital ($\bar{x} = 1.90$) and lack of extension services ($\bar{x} = 1.90$) took the lead among the constraints associated with smallholder vegetable farming in urban-farm clusters in Lagos State. There was a positive correlation between constraints associated with vegetable farming in urban-farm clusters (r = 0.629, p = 0.000), perceived prospects of vegetable farming in urban-farm clusters (r = 0.385, p = 0.000), and the training needs among smallholder vegetable farmers in urban-farm clusters in Lagos State. The study recommends that smallholder vegetable farmers in urban-farm clusters in Lagos State be profiled and mainstreamed into the relevant government agencies to facilitate their access to government support and ancillary services.

Keywords: ***Perceived prospects, smallholder vegetable farmers, training needs, and urban-farm clusters***

INTRODUCTION

In recent years, Urban Agriculture (UA) has become an increasingly relevant topic in the science and planning of urban food systems aimed at reducing food insecurity at the household level (Smith *et al*. 2013). Urban agriculture is a rather discreet but cosmopolitan phenomenon, resulting from the quest by urban households to enhance their means of livelihood. Discreet because it is often practiced in inconspicuous vacant lands or open spaces; it is cosmopolitan because it is practiced in every city of both developed and developing countries. Urban agriculture encompasses a range of activities, such as the production, processing, marketing, and distribution of agricultural produce in an urban setting (Orsini *et al*., 2013). Across the world, urban agriculture provides employment opportunities to urban residents in varying forms and degrees. In the global north, urban agriculture is usually practiced on a

wide range of land areas, including allotments, private domestic gardens, community gardens, and commercial market gardens (Foster et al., 2017), producing predominantly fruits and vegetables (Orsini et al., 2013). Whereas, in the global south, urban food production is practiced on privately owned or rented land, vacant or open spaces, greenhouses, as well as in rivers, ponds, and lakes (Ibitoye *et al.*, 2016; Olumba *et al.*, 2019).

One of the primary challenges of urban agriculture is limited space. Urban areas are often densely populated, leaving little room for agricultural activities. Finding suitable land for urban agriculture can be a significant barrier, especially in low-income neighborhoods where land ownership may be limited. Urban soils can also be contaminated with a variety of pollutants, including heavy metals, pesticides, and industrial chemicals. Soil contamination can pose health risks for both farmers and consumers, making it essential to test soil before planting and to take appropriate measures to remediate contaminated soils. According to Ajayi *et al.* (2020), most urban farmers in Lagos State rely on local markets and direct sales to consumers for their income. However, these markets are often characterized by low prices and price fluctuations, which limit the income-generation potential of vegetable farming. Urban farming may face limited access to resources, including water, seeds, and other inputs. In many urban areas, water is a scarce resource, and farmers may face restrictions on water use. Access to high-quality seeds and inputs can also be limited, which can reduce crop yields and quality. Urban farming may also face regulatory barriers, including zoning laws, health codes, and food safety regulations. These regulations can limit the types of crops and animals that can be grown in urban areas and can create additional costs for farmers. Appropriately addressing these challenges calls for the identification of the training gaps of the farmers.

African leafy vegetables are mostly gathered from the wild (Maseko *et al.*, 2018). They have important advantages over exotic vegetable species because of their adaptability to marginal agricultural production areas and their ability to provide dietary diversity in poor rural communities (Maseko *et al.*, 2018). Leafy vegetables play a significant role in the food security of smallholder farmers in rural, peri-urban, and urban areas (Gogo *et al.*, 2016). This group of vegetables, also referred to as greens or pot-herbs, is popular around the world, especially in Asia, and they include spinach, beet, lettuce, amaranth, fenugreek, and Chinese cabbage (Dhaliwal, 2017). Vegetables play a significant role in supplying the essential minerals, vitamins, and fiber not present in large quantities in starchy staple foods. Vegetables add flavor to meals, are tasty and healthy, and supply both proteins and carbohydrates. Other vegetables common to urban farmers are *Cochorus olitorus*, *Talinum triangulare*, *Celosia argentae*, *Teliferia occidentalis*, etc. These crops are preferred by farmers because they are relatively easy to grow and have a high demand in the local market. Other commonly grown vegetables include tomatoes, peppers, onions, and cucumbers. The need to enhance vegetable production owing to its numerous benefits remains a prominent concern.

According to Abrokwah *et al*. (2018), farmers who undergo a training need assessment are better able to identify their strengths and weaknesses and focus their training efforts on areas where they need the most improvement. The training needs assessment seeks to accurately identify the levels of the present situation in the target

surveys, interviews, observations, secondary data, and/or workshops. The gap between the present status and the desired status may indicate problems that, in turn, can be translated into a training need. According to Amin *et al*. (2018), a needs assessment helps to identify the training topics that are most important to the farmers and that will have the most significant impact on their productivity and income. Identifying the training needs and educating farmers through tailored needs aims to contribute to adult learning and improve their farming performance.

Reflecting on the foregoing, the study sought to investigate the training needs of smallholder vegetable farmers in urban-farm clusters of Lagos State, Nigeria. Specifically, this study

(i) described the socio-economic characteristics of smallholder vegetable farmers in urban-farm clusters of Lagos State;
(ii) described the enterprise characteristics of the respondent;
(iii) identified the perceived prospects of the respondents;
(iv) identified the training needs of the respondents; and
(v) profiled the constraints associated with vegetable farming in urban-farm clusters in the study area.

The study hypothesized that there is no significant relationship between constraints associated with vegetable production, perceived prospects of vegetable farming, and training needs of smallholder vegetable farmers in urban-farm clusters of Lagos state, Nigeria.

METHODOLOGY

The study was conducted in Lagos State, Nigeria; however, Ojo and Kosofe Local Government Areas (LGAs) were the specific study locations, considering the presence of urban-farm clusters for smallholder vegetable production. Ojo Local Government Area of Lagos State, Nigeria, located at 6° 28′ N and 3° 11′ E, was created in 1989 with a landmass of 182 km2, and about 30% of it can be described as riverine. The LGA is diverse in terms of land use, ethnicity, and income distribution. Ojo is a primarily residential township, although it contains some major markets, including Alaba International Market, Alaba Livestock Market (Alaba Rago), the old Lagos International Trade Fair complex, and Iyana-Iba Market. Kosofe is a local government area of Lagos State located at *6° 26′* N, *3°* 25' E. It has an area of 81 km2. The local government has a diverse population, with people from different ethnic and religious backgrounds living together. The population of the study comprised all smallholder vegetable farmers in the study area.

A multi-stage sampling procedure was used to sample respondents for the study. In the first stage, Ojo and Kosofe Local Government Areas were purposively selected due to the high concentration of urban-farm clusters for vegetable production in the state. The second stage involved the random selection of 50% of the registered groups of vegetable farmers in these LGAs. A total of nine groups were sampled at this stage; the registered members of these groups were 27. 30, 32, 24, 35, 28, 40, 38, and 32, respectively. The last stage involved the proportionate sampling of 30% of the farmers in each group earlier sampled, this gave 8, 9, 10, 7, 11, 8, 12, 11, and 10 farmers sampled, respectively. In all, a total of 86 smallholder vegetable farmers were sampled for the study.

Data for the study were gathered through the administration of an interview schedule to the respondents. Variables assessed were socio-economic characteristics, enterprise characteristics, perceived prospects of smallholder vegetable farming, the training

needs of vegetable farmers in urban farm clusters and constraints associated with vegetable farming in urban-farm clusters of the clusters in the study area. The training needs were assessed by presenting activities under the pre-planting, planting, and post-planting phases of the production, from which respondents responded to either not needed, somewhat needed, needed, or mostly needed with scores of 0, 1, 2, and 3, respectively. The weighted mean average was used to isolate their training needs. Both descriptive (frequency count, percentage, and mean) and inferential statistics (Pearson Product Moment Correlation) were used for data analysis and presentation of results.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The results in Table 1 reveal that there is a preponderance of males (82.6%) engaged in vegetable farming in urban clusters compared to females (17.4%). These disproportionate statistics can be attributed to the inability of females to cope with the dynamics and demands associated with farming. Notably, farming in urban clusters bears a resemblance, as the pattern aligns with Adeyemo *et al.* (2017), who highlighted male predominance in on-farm agricultural activities. The majority (88.4%) of the respondents were married. Marriage holds significant social importance to the individuals involved, which suggests that they have responsibilities to fulfill. Hence, it is understandable that the respondents will favourably seek avenues that will expose their training needs and avail them of opportunities to receive training to enhance their production capabilities. The result, as shown in Table 1, shows that the respondents have a moderate household size of 6±4 persons. The large household size can serve as a potential labor source. Notably, the need to meet the needs of the household will spur them to engage in activities that will enhance the profitability of their enterprise. The evidence in Table 1 reflects that the respondents are middle-aged (49±9.45 years). Considering the physical exertion associated with their enterprise activities, with time, they may not be able to conveniently engage in these activities. This may threaten the succession of vegetable farming in urban farm clusters. The majority (84.9%) are non-natives of the town; this further demonstrates that the majority engaged in farming activities in the urban clusters are migrants. The need to make a living could have been responsible for them taking advantage of the opportunity that engaging in farming in urban clusters offers.

Table 1 also reveals that the respondents have spent a sizeable duration **(**18.07±7.79 years) of farming experience in the farm cluster. This reflects that they are not new to this endeavor; they have acquired some experience in the enterprise and can acknowledge the training gaps that need to be addressed to enhance their enterprise activity. This view is consistent with Oladele *et al.* (2020), who posited that farmers' experience plays a pivotal role in identifying the skill gaps of their enterprises. In terms of educational qualifications, Table 1 presents a mixed profile of the respondents, with a significant proportion (41.9.0%) having secondary education, while 15.1% and 7.0% represent tertiary and primary educational qualifications. This implies that they are literate and, hence, will be able to acknowledge their training needs and appropriate these trainings to enhance the general outlook of their enterprise. Information as revealed in Table 1, also indicates that a significant proportion (75.6%) of the respondents engaged in vegetable production in urban clusters as their primary income-generating activity, while a few (14.4%) were in artisanal activities. This reflects that their enterprise

vegetable farming is sustainable and is enabling as a viable employment, considering their engagement in the enterprise as a primary income-generating activity. On average, the respondents made a remunerative monthly income of ₦ 174,069.77 ± 83,800 from their enterprise. This reflects that vegetable production in urban farm clusters is lucrative, as this suggests that there is demand for their produce, hence making it worthwhile to engage in it.

Table 1: Socioeconomic characteristics of the respondents

Variable	Frequency	Percentage	Mean ± Standard Deviation
Sex			
Male	71	82.6	
Female	15	17.4	
Marital status			
Single	5	5.8	
Married	76	88.4	
Widowed	5	5.8	
Household size (persons)			
2-5	16	18.6	**6.19±3.88**
6-7	51	59.3	
8-14	19	22.1	
Age (years)			
25-33	7	8.1	**49±9.45**
34-42	10	11.6	
43-51	34	39.5	
52-60	35	40.7	
Are you a native of this town (farm cluster)			
Non natives	73	84.9	
Natives	13	15.1	
Duration of farming in the farm cluster (years)			
5-12	25	29.1	**18.07±7.76**
13-20	32	37.2	
21-28	19	22.1	
29-36	10	11.6	
Educational Qualification			
Informal education	31	36.0	
Primary Education	6	7.0	
Secondary education	36	41.9	
Tertiary Education	13	15.1	
Primary income generating activity			
Farming	65	75.6	
Artisanal activities	21	14.4	
Average monthly income (Naira)			
30,000-113,800	22	25.6	**174,069.77±83,800**
113,801-197,601	27	31.4	
197,602-281,402	23	26.7	

281,403-365,203	12	14.0
365,204-450,000	2	2.3

Source: Field survey: 2023.

Enterprise characteristics of smallholder vegetable farmers

The result in Table 2 reveals that, on average, the respondents cultivate a farm size of 0.64±0.23 hectares. This reveals that they are smallholder farmers. Most of the urban farm clusters are unoccupied spaces and government-earmarked setbacks along roads that have been converted to productive use. The limited availability of land resources for urban farming is largely due to population pressure in urban regions (Akinlade *et al.*, 2016). Results in Table 2 also reveal that hired labor (55.8%) is the main source of labor that is deployed to use for their enterprise activities. Also, family members (33.7%) were deployed to use as a labor source. The choice to prominently make use of hired labor is partly due to its consistent availability and the need to operate its activities as a business, hence removing the casual nature of utilizing family labor for its enterprise activities. Table 2 also reveals that leasehold (66.3%) is the main method of land acquisition used by the respondents. It is established that due to the paucity of land resources, the respondents opt for this medium of land tenure to access land, acknowledging that some of the inhabitants are the custodians of the land, although they may not claim total ownership of the land. This assertion is in tandem with the findings of Edeh *et al.* (2019) that land tenure can significantly impact farmers' land tenure security and their willingness to invest in land improvements.

The main medium of finance accessed by the respondents, as revealed in Table 2, was through microfinance institutions (57.0%). Also accessed are personal savings (33.7%) and family members (9.3%). Their reliance on these informal sources of financing their enterprise activities reveals their limited access to formal credit, acknowledging that this may come with stringent terms that will affect their smooth access to and utilization of credit. This, in turn, will impact their enterprise activities and their livelihood outcomes. A significant proportion (52.4%) of the respondents marketed their produce at the farm gate, while a notable proportion (39.5%) explored the open market as a medium for the sale of their farm produce. The preference for selling farm produce through these media is to engage directly with consumers to reduce the link in the value chain, thereby minimizing transaction costs and maximizing profit.

Table 2: Enterprise characteristics of smallholder vegetable farmers

Variable	Frequency	Percentage	Mean ± Standard Deviation
Farm size (hectares)			
0.24 - 0.36		2.3	**0.64±0.23**
0.40 - 0.65	43	50.0	
1.69 - 0.93	36	41.9	
0.97 - 1.2	5	5.8	

Main source of labour		
Self	9	10.5
Familylabour	29	33.7
Hired labour	48	55.8
Main medium of land tenure		
Inheritance	20	23.3
Leasehold	57	66.3
Purchased	9	10.5
Main medium of finance		
Family members	8	9.3
Micro finance institutions	49	57.0
Personal savings	29	33.7
Main medium of marketing farm produce		
Farm gate	45	52.4
Middle men	7	8.1
Open Market	34	39.5

Source: Field survey, 2023.

Perceived prospects of smallholder vegetable farming in urban-farm clusters

Data in Table 3 reveals that the source of income generation ($\bar{x}$ =1.87), employment ($\bar{x}$ =1.83), household food security ($\bar{x}$ =1.72), and sustenance of family businesses ($\bar{x}$ =1.71), was prominent among the identified perceived prospects of smallholder vegetable farming in urban-farm clusters. These prospects suggest the positive outlook of vegetable farming in urban clusters as having huge potential for income and employment generation. These are considered crucial indices of the contributions of agriculture to the growth of nations. Furthermore, it reveals that produce from their enterprise can potentially serve as food security for their household. Furthermore, livelihood opportunities can be created as their venture is considered a potential source of sustenance for family businesses. The assertion above is consistent with the findings of Adepoju *et al.* (2019), who found that agriculture plays a vital role in providing livelihoods and employment opportunities in Nigeria. Other potential prospects of vegetable farming in urban clusters are a low cost of investment ($\bar{x}$ =1.47) and a sustained market for farm produce ($\bar{x}$ =1.44). Considering the cost of the factors of production in this enterprise compared to other on-farm agriculture-related enterprises, the cost is comparatively low, hence embracing it as a perceived prospect. This view is consistent with the findings of Adepoju *et al.* (2019), who found that vegetable farming plays a crucial role in ensuring food availability and access for Nigerian households.

On a cumulative scale as revealed in Table 4, the data uphold that vegetable farming in urban farm- clusters is perceived as a prospect (67.41%). The plausible reasons attributable are the opportunities inherent in the enterprise as a promising venture that enhance food security and sustainable employment generation.

Table 3: Perceived prospects of smallholder vegetable farming in urban-farm clusters

Perceived prospects	Not feasible as a prospect F (%)	Partially feasible as a prospect F (%)	Largely feasible as a prospect F (%)	Weighted mean
Source of income generation	4 (4.7)	3 (3.5)	79 (91.9)	1.87*
Sustenance of family business	0	27 (29.1)	61 (70.9)	1.71*
Source of employment	0	16 (17.4)	71 (82.6)	1.83*
Source of household food security	0	24 (27.9)	62 (72.1)	1.72*
Sustained market/demand for farm produce	0	48 (55.8)	38 (44.2)	1.44*
Remunerative prices for produce	2 (2.3)	47 (54.7)	37 (43.0)	1.41
Low cost of investment	7 (8.1)	32 (37.2)	47 (54.7)	1.47*
Regulated/controlled pricing of produce	3 (3.5)	59 (68.6)	24 (27.9)	1.24
Support from government	0	65 (75.6)	21 (24.4)	0.24

Source: Field survey, 2023. *Perceived prospect ≥ Weighted mean average = 1.44

Table 4: Categorization of perceived prospects of smallholder vegetable farming in urban-farm clusters

Categorization	F	%	Minimum	Maximum	Mean	Standard Deviation
Not a prospect	28	32.6	1	2	1.67	0.47
A prospect	58	67.41				

Source: Field survey, 2023

Training needs of smallholder vegetable farmers in urban-farm clusters

Entries in Table 5 reveal that the testing of seed viability ($\overline{x}$ =2.69), soil treatment ($\overline{x}$ =2.65), and soil testing ($\overline{x}$ =2.55), were prominent among the training needs under the pre-planting activities. This reflects that the respondents understand the importance of assessing the viability of seeds to ascertain that the planting material is in a good state to ensure a productive life after planting. Ensuring that the state of the soil is suitable and good enough to accommodate other growth factors is a plausible reason for seeking training in soil treatment and testing. Sourcing for improved seeds ($\overline{x}$ =2.32) was also identified as a training need of the respondents during this phase. Acknowledging that the integrity of the planting material is related to how and where it is sourced, this training to identify the right sourcing of seeds was considered a priority. Seed treatment ($\overline{x}$ =2.64) was identified as a training need under the planting activity phase. This attests to the fact that one of the essentials for enhancing agricultural productivity is proper seed treatment, hence their quest to undertake training on seed treatment.

Under the post-planting phase, pest and disease identification ($\overline{x}$ =2.73), pest and disease control methods ($\overline{x}$ =2.71), and fertilize application methods ($\overline{x}$ =2.60) ranked highest as training needs of vegetable farmers in urban farm clusters. The losses accrued to their enterprise as a result of pest and disease invasions are a plausible reason for their quest to undertake training on these post-planting activities. Having sufficient knowledge of these activities will further increase their productivity, owing to the reduction of post-harvest losses attributed to pest and disease attacks. Through training,

trainees are sufficiently equipped to deploy requisite skills to productive use in their respective agricultural ventures (Oyebode *et al.*, 2022). The need to ensure maximum uptake of nutrients from fertilizer application could have informed their quest to receive training on fertilizer application methods. Furthermore, the appropriateness of fertilizer application will ensure that maximum benefits are derived and productivity is assured. Fertilizer selection, weed control techniques ($\bar{x}$ =2.41), and harvesting techniques ($\bar{x}$ =2.41) were also identified as activities of training need. Knowledge of the appropriate fertilizer and the rate of application are pivotal to enhancing farm output, hence the quest for training on this activity. Recognizing the fragile nature of vegetables, deploying appropriate weed control techniques will enhance the productivity of the enterprise by ensuring that only appropriate weed control measures are adopted and that there is no damage to the crops during application. In a bid to ensure that crops are harvested after attaining physiological maturity, training on appropriate harvesting techniques was sought in a bid to ensure that maximum yield is attained from the crops. This gave rise to the need for training on this activity.

Table 5: The training needs of smallholder vegetable farmers in urban-farm clusters

Training needs	Not needed F (%)	Somewhat needed F (%)	Needed F (%)	Mostly needed F (%)	Weighted mean
Pre-planting Activities					
Soil treatment	0	3 (3.5)	24 (27.9)	59 (68.6)	2.65*
Field plotting and farm layout	2 (2.3)	26 (30.2)	36 (41.9)	22 (25.6)	1.91
Soil testing	2 (2.3)	2 (2.3)	29 (33.7)	53 (61.6)	2.55*
Nursery operations	4 (4.7)	39 (45.3)	23 (26.7)	20 (23.3)	1.69
Sourcing for improved seeds	6 (7.0)	4 (4.7)	32 (37.2)	44 (51.2)	2.32*
Testing of seed viability	0	6 (7.0)	15 (17.4)	65 (75.6)	2.69*
Planting Activities					
Seed treatment	0	2 (2.3)	27 (31.4)	57 (66.3)	2.64*
Planting methods	2 (2.3)	13 (15.1)	34 (39.5)	37 (43.0)	2.23
Planting techniques	4 (4.7)	10 (11.6)	30 (34.9)	42 (48.8)	2.28
Post-planting Activities					
Fertilizer selection/rate	2 (2.3)	6 (7.0)	24 (27.9)	54 (62.8)	2.51*
Fertilizer application method	4 (4.7)	4 (4.7)	16 (17.4)	63 (73.3)	2.60*
Pest and disease control method	2 (2.3)	6 (7.0)	7 (8.1)	71 (82.6)	2.71*
Pest and disease identification	0	5 (5.8)	13 (15.1)	68 (79.1)	2.73*
Weed control techniques	0	13 (15.1)	25 (29.1)	48 (55.8)	2.41*
Harvesting techniques	2 (2.3)	9 (10.5)	27 (31.4)	48 (55.8)	2.41*
Climate change adaptation	1 (1.2)	33 (38.4)	46 (53.5)	6 (7.0)	1.66
Marketing information and supply chain activities	0	10 (11.6)	46 (53.5)	30 (34.9)	2.23
Sowing of seeds	2 (2.3)	34 (39.5)	19 (22.1)	31 (36.1)	1.92
Irrigation	7 (8.1)	30 (34.9)	19 (22.1)	30 (34.9)	1.84

***Training needs of smallholder vegetable farmers in urban-farm clusters. ≥ Mean average: Pre-planting activities =2.30, Planting activities = 2.38, post-planting activities=2.30**
Source: Field survey, 2023.

Constraints associated with smallholder vegetable farming in urban-farm clusters

The results in Table 6 show that non--recognition by government institutions ($\bar{x}$ =1.93), inadequate capital ($\bar{x}$ =1.90), lack of extension services ($\bar{x}$ =1.90), and high cost of leasing land ($\bar{x}$ =1.88) ranked highest among the constraints associated

with smallholder vegetable farming in urban-farm cluster identified by the respondents. Due to the lack of recognition by the government, they do not enjoy the incentives that the government provides to other farmers of similar attributes. This further places their enterprise at risk since their activities are not captured by the appropriate government agencies. Their inability to access sufficient capital for their enterprise will impede their ability to purchase and make use of modern farm inputs, which will enhance their enterprise. Furthermore, they will be unable to expand the scale of their business as they will be unable to purchase assets that will enable them to fulfill this vision. They are also denied of extension services, good agricultural practices (GAP), which, if put to productive use, will enhance their yield. The high cost of leasing land will further increase their production costs. Furthermore, land-related expenses can pose a considerable burden and threaten to sustain their interest in the venture. This view is consistent with the assertion of Akinbode e*t al.* (2011) that land tenure challenges have long plagued Nigerian agriculture, adversely affecting land access and the security of farmers.

In addition, inadequate credit facilities ($\bar{x}$ =1.87), use of crude tools ($\bar{x}$ =1.81), high cost of inputs ($\bar{x}$ =1.80), and insufficient post-harvest facilities ($\bar{x}$ =1.76) were also identified as constraints associated with smallholder vegetable farming in urban-farm clusters in Table 6. The burden of inadequate credit facilities can pose a major impediment to sustained production, denying them the wherewithal to purchase technologies that will enable them to sustain and expand the scale of their enterprise. Limited access to credit facilities is largely attributable to their inability to provide sufficient collateral and the highly informal nature of their enterprise. The use of crude tools still characterizes their enterprise, making it impracticable for the farmers to obtain commensurate huge returns on investment, owing to their limited production scale. The huge cost of inputs increases the cost of production, which further limits the production capacity of the farmers. Cumulatively, this leads to poor remunerative costs from their proceeds. Inability to enhance the shelf life of produce owing to insufficient post-harvest losses. This is further debilitating as their output is reduced and the income accruable from each production cycle is non-remunerative.

Table 6: Constraints associated with smallholder vegetable farming in urban-farm-clusters

Constraint	Not a constraint F (%)	Mild constraint F (%)	Severe constraint F (%)	Weighted mean
Inadequate capital	0	9 (10.5)	77 (89.5)	1.90*
Threat from land grabbers	58 (67.4)	23 (26.7)	5 (5.9)	0.38
Low farm gate price	15 (17.4)	43 (50.0)	28 (32.6)	1.15
Use of crude tools	0	16 (18.6)	70 (91.4)	1.81*
High cost of leasing land	0	10 (11.6)	76 (88.4)	1.88*
High cost of farm inputs	0	17 (19.8)	69 (80.2)	1.80*
Lack of extension services	0	9 (10.5)	77 (89.5)	1.90*
Pest and disease attack	0	54 (62.8)	32 (37.2)	1.30
Effect of climate change	16 (18.6)	56 (65.1)	14 (16.3)	0.97
Non-recognition by government institutions	2 (2.3)	2 (2.3)	82 (95.3)	1.93*
Polluted irrigation water	37 (43.0)	38 (44.54)	11 (12.8)	0.70
High cost of labour	2 (2.3)	45 (52.3)	39 (45.3)	1.43

Inadequate credit facilities	13 (15.1)	71 (82.6)	2 (2.3)	1.87*
Insufficient post -harvest facilities	22 (25.6)	62 (72.1)	2 (2.3)	1.76*
Inadequate water supply for irrigation	8 (9.3)	49 (57.0)	29 (33.7)	1.26

Source: Field survey, 2023. * ≥ Mean average of 1.46 (Constraints associated with smallholder vegetable farming in urban-farm-clusters)

Study Hypotheses

Results in Table 7 indicate a positive correlation (r = 0.629, p = 0.000) between constraints associated with vegetable farming in urban-farm clusters and the training needs among smallholder vegetable farmers in urban-farm clusters. This illustrates that the vegetable farmers understand that the limitations of their business can only be solved by providing them with effective training, which explains the proven association between these variables. The information in Table 6 also shows a positive correlation (r = 0.385, p = 0.000) between perceived prospects of vegetable farming in urban-farm clusters and training needs among smallholder vegetable farmers in urban-farm clusters. Recognizing that there are prospects in their business, they are favorably disposed to accessing training on activities that make up their production.

Table 7: Study hypotheses

Variable	r	P
Constraints associated with vegetable farming in urban-farm clusters	0.629	0.000
Perceived prospects of vegetable farming in urban-farm clusters	0.385	0.000

Source: Field survey, 2023.

CONCLUSION AND RECOMMENDATIONS

The study concludes that the majority of the respondents were male, married, and had a fairly large household size. They were of middle age, had spent a sizeable length of time farming in urban clusters, and made a significant monthly income. Their enterprise characteristics reveal the smallholder nature of their venture, as hired labor, leasehold tenure, and marketing at the farm gate are their main channels of marketing farm produce. Sources of income and employment were prominently perceived as prospects for smallholder vegetable farming in urban-farm clusters. Cumulatively, the majority considered smallholder vegetable farming in urban-farm clusters as a prospect. Testing of seed viability, seed treatment, and pest and disease identification were prioritized as training needs across the phases of their production activities. Non-recognition by government institutions ranked highest among the established constraints associated with smallholder vegetable farming in urban-farm clusters. A correlation was established between constraints associated with vegetable farming in urban-farm clusters, perceived prospects of vegetable farming in urban-farm clusters, and training needs among smallholder vegetable farmers in urban-farm clusters. In light of the aforementioned, the study recommends that smallholder vegetable farmers in urban-farm clusters be profiled and mainstreamed under appropriate government agencies in order to facilitate their access to government support and ancillary services.

REFERENCES

Abrokwah E., Ge Yuhui, Ramous A. and Anita A. (2018): Recruitment and Selection Practices among non-governmental organizations (NGOs) in Ghana. *Labour History* 59 (17). http://dx.doi.org/10.1080/0023656X.2018.1422417.

Adepoju, I. (2019). "Rural-Urban Migration Dynamics in Nigeria." *Migration Studies Review*, 4(3): 34-47.

Adeyemo, O., Adebola, T. and Oni, S. (2017). "Gender Disparities in Nigerian Agriculture." *Journal of Agricultural Studies*, 7(2): 45-56.

Ajayi, C. A., Alao, F. O. and Oladeji, S. O. (2020): Urban agriculture and food security in Lagos State, Nigeria. *International Journal of Environment and Sustainable Development,* 19(2): 132-144.

Akinbode S.O, Dipeolu A.O and Ayinde I.A (2011). An Examination of technical, allocative and economic efficiencies in Ofada rice farming in Ogun state Nigeria. *Africa Journal of Agricultural Research*, 6(28): 6027-6035.

Akinlade R. J., Balogun O., and Obisesan A. (2014): Commercialization of Urban Vegetable Farming. International Journal of Vegetable Science. 22(1) DOI: 10.1080/19315260.2014.921266

Amin, M. R., Ahmed, T., Hossain, M. S., and Ahmed, M. R. (2018): Assessing the training needs of vegetable farmers in Bangladesh. *Journal of Agricultural Education and Extension*, 24(5): 399-413.

Dhaliwal, M. S. (2017). Leafy and Salad Vegetables. In Handbook of Vegetable Crops (pp. 279-310). Research Gate.

Edeh O.H., Geaoge M., Bedru, B.B. (2022): Land Tenure Security and preferences to dispute resolution pathways among landlords in Nigeria. *Land Use Policy* 119 (3–4). Land Use Policy 119(3–4):106179. http://dx.doi.org/10.1016/j.landusepol.2022.106179

Foster G, Bennett J, Sparks T (2017) An assessment of bumblebee (Bombus spp) Land use and floral preference in UK gardens and allotments cultivated for food. *Urban Ecosystem* 20(2):425–434. https://doi.org/10.1007/s11252-016-0604-7

Gogo, E., Opiyo, A., Ulrichs, C., and S, Huyskens. Keil. (2016). Loss of African Indigenous vegetables along the supply chain. *International Journal of Vegetable Science*. Taylor and Francis, Vol. 24:4 https://doi.org/10.1080/19315260.2017.14 21595

Ibitoye S., Ufedo M.S., Faith A.S. and Frank O.E (2016): Assessment of the Influence of Urban Agriculture on Household Income. Evidence from Kogi State, Nigeria. *International Journal of Agricultural and Veterinary Sciences.* 2(3):107-115, http://dx.doi.org/10.18819/ijavs.2016.1558

Maseko, I., Bhekumthetho, N., Tesfay S., Fessehazion, M., Thembinkosi, A. M. and Tafadzwanashe, M. (2020): Productivity of Selected African

Leafy Vegetables under Varying Water Regimes. *Agronomy*, 10 (6): 916.
DOI: 10.3390/agronomy10060916

Maseko, I.; Mabhaudhi, T.; Tesfay, S.; Araya, H.T.; Fezzehazion, M.; Plooy, C.P.D. African Leafy Vegetables (2018): A Review of Status, Production and Utilization in South Africa. *Sustainability*, *10*, 16. https://doi.org/10.3390/su10010016

Oladele, O. N., U. U. Emeghara, J. T. Ayodele, B. F. Ishola, T. A. Awobona, and O. Olukotun. 2020. Contribution of Home Gardening to Household Food Security: A Case Study of Home Gardeners in Igabi Local Government Area of Kaduna State, Nigeria". *Asian Journal of Agricultural and Horticultural Research*, 6(3): 13-23. https://doi.org/10.9734/ajahr/2020/v6i330073.

Olumba, C. C., Alimba, J. O. and Tasie, O. (2019). Assessing the factors influencing access to land for urban agriculture in Southeast Nigeria. Feed the Future Innovation. *Lab for Food Security Policy Research Briefs*, 303580. https://doi.org/10.22004/ag.econ.303580

Orsini, F., Kahane, R., Nono-Womdim, R. and Gianquinto, G. (2013) Urban agriculture in the developing world: a review. *Agronomy for Sustainable Development*, 33(4): 695–720. https://doi.org/10.1007/s13593-013-0143-

Oyebode L. A. , Adeloye K. A. [2] and Obehi L. P. (2022): Sustained Utilization of Skill Set: Assessing Ex-Agripreneurial Trainees of Agricultural School Programme in Osun State, Nigeria. *Agricultura Tropica et Subtropica*, 55 OV, 149–158. https://doi.org/10.2478/ats-2022-0016

Smith, V.M., Greene R.B., and J. Silbernagel. (2013). The social and spatial dynamics of community food production: A landscape approach to policy and program development. *Landscape Ecology* 28(7): 1415–1426

Uyovbisere, E.O., Chude, V.O. and Bationo, A. (2000). Promising nutrient ratios in fertilizer formulations for optimal performance of maize in the Nigerian savanna. The need for a review. *Nigeria Journal of Soil Research*, 1, 29 – 34.