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The Sustainable Niche for Urban Vegetable Production within Producer Setups and Attributes in Addis Ababa, Ethiopia

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Abstract
Rapid urbanization places great pressure on the food supply as well as urban agriculture practices at the global level. In Ethiopia, vegetable production serves as a unique opportunity to diversify employment, income, and food security for urban households. Various socioeconomic factors play important roles in the adoption of vegetable farming that are crucial in enhancing the low rate of production in Addis Ababa. Therefore, this study was designed to examine the sustainable niche for urban vegetable production within producer setups and attributes in Addis Ababa, Ethiopia. In this research, data were collected using questionnaire surveys and focus group discussions. A probability sampling technique was employed to select the respondent households. Household data were analyzed using descriptive statistics and multinomial logistic regression. The findings show that vegetable production activities were dominated by young (31–40 years) male participants with primary and secondary level education. Most vegetable producers were married and owned their own private houses, and most participants held small plots of land. The multinomial regression analysis results show that sample households' vegetable production was statistically significantly affected by access to river water. We argue that ensuring policy interventions includes enhancing farmers' education and strategies to promote land management, reducing gender inequality, and improving resource availability.
Keywords: Food security, vegetable production, urban agriculture, sustainability, Addis Ababa
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1. INTRODUCTION

Agriculture has frequently been associated with rural environments in order to feed the human population. However, recent research indicates that urban agriculture (UA) contributes significantly to the urban population by supplying fresh and nutritious food, providing direct access to a variety of food products, lowering food expenditure on food bills, and providing social benefits to the community Korth *et al.,* 2014; Opitz *et al.,* 2015; FAO, 2017; Martin-Moreau & Ménascé, 2019).

UA has been practiced for as long as cities have existed on the planet. It could be defined as agriculture producing perishable products, for example, vegetables, animal products, and flowers, in the urban and peri-urban area (Yan *et al.,* 2022). As the world rapidly urbanizes, great strain is placed on the food supply and urban environment, particularly in rapidly developing cities, by the emergence of complex socioeconomic and demographic characteristics (Ranagalage *et al.,* 2021).

In Ethiopia, UA offers a one-of-a-kind opportunity for urban households to diversify employment, income, and dietary options, as well as recycle and reuse urban waste, thereby contributing to long-term urban development (Amsalu, 2020). Home gardening, particularly the cultivation of flowers and other ornamental plants, is an ancient practice in Ethiopia. Gardening is primarily concerned with traditional herbal medicines in Ethiopia that is becoming a fashion as well as an additional investment for city dwellers in addition to their regular businesses. According to Dejen (2020) urban agricultural activities are increasingly being recognized as a valuable source of food, nutrition, and income for the urban poor. In the country, UA is primarily focused on the production of high-value vegetable crops, which are expected to be an important mechanism for poverty alleviation in towns and cities (Ashebir *et al.,* 2007). Despite its potential, the sector continues to receive insufficient institutional and policy support (Yalew, 2020). Today, urban farming is introducing new and simple technologies as well as modern farming activities to cities with limited space and resources. UA, particularly in the farming system of vegetable and fruit farming, plays a critical role in producing both household and market-oriented fresh products while also contributing to the production of clean air in polluted cities.

Urban vegetable production has been practiced in Addis Ababa for almost three decades by vegetable producers' cooperatives along riverbanks (Tamirat & Bezabih, 2011). Currently, the city municipality of Addis Ababa has launched a new campaign to encourage city dwellers to produce urban agricultural products in their neighbourhoods, gardens, and along the riverbank, both individually and in groups. Though the practice existed

in an unorganized manner among various households prior to the city's campaign, a large number of households began farming, primarily to produce vegetables for household consumption within their limited land, following the city's campaign (Nimona, 2017).

Addis Ababa urban farmers primarily cultivate vegetables for personal consumption and profit (Yared, 2019). Vegetables, which are both nutritious and protective, play an important role in balancing the human diet. Nutritional intake from fresh vegetables has a positive impact on health (Khan *et al.,* 2012). According to Messay (2013), at least 11,716 registered households in Addis Ababa practice urban and periurban agriculture. Today, however, the city of Addis Ababa has 106,280 registered urban vegetable producers, indicating a significant increase in the number of participants in the production system (AAFUADC, 2021). Nowadays, urban farmers provide approximately 60% of the city's vegetable consumption, primarily leafy vegetables (Dejen, 2020). Furthermore, Addis Ababa's vegetable producers continue to use hoes for seed bed preparation, spades and hoes to divert river water to their farm land through furrows, sand-filled sacks to build diversion sites along major rivers in Addis Ababa, and sickles to trim their vegetables (Tamirat & Bezabih ,2011).

This study investigated the major elements and situations that producers face in producing vegetables in Addis Ababa from a production and sustainability perspective. Most research Teferee (2003); Tewodros (2007); Abraham (2012) ; Thomas (2013) ; Fekadu (2013) ; Messay (2013); Abraham & Misikire (2014); Assefa (2016); Sophia (2015); Bogale (2017); Dejen (2020), conducted in Addis Ababa has concentrated on UA practices, but little attention has been given to socioeconomic factors that affect vegetable production in the sustainability manner in the study region. The aim of the study is to identify factors determining vegetable production setups and attributes of producers in the study area. Those interested in urban agriculture, urban land use planners, environmental activists, politicians, researchers, urban sustainable development actors, and urban farmers' communities in the study area may benefit significantly from the analysis.

2. MATERIALS AND METHODS

2.1. Description of the study area

This study was conducted in Addis Ababa's Nifas Silk Lafto sub-city. The sub-city is located on the southwest outskirts of Addis Ababa, and it is divided into 13 weredas sub-city (Abnet, 2010). It has a moderately downslope topography with visible elevation differences in the landscape around river gorges in some areas. The Little Akaki River flows through the sub-city, allowing the area to contain the majority of the Little Akaki River's sub-catchment (Deshu *et al.,* 2021). Many cooperatives and small-holder vegetable producers grow a variety of vegetable products along its course, which flows to the river's lower catchment.

The climate in the area is afro-alpine temperate (Abrham, 2012). The climate is characterized by two distinct seasonal weather patterns. The main wet season, known locally as Kiremt, lasts from June to September and accounts for roughly 70% of total annual rainfall. From mid-February to mid-April, the region receives moisture from a minor rainy season known locally as "Belg." And the remaining months are completely dry (Ferezer, 2021). The daily average temperature ranges from 9.90 to 24.60 degrees Celsius, and the average annual rainfall is 1254 millimetres Deshu *et al.,* (2021).

In particular, vegetable production in the study area is divided into two categories: farming in backyards, open spaces around houses, low-lying areas, along riverbanks in city core areas, and farming in peri-urban areas (Abrham, 2012). The first category is considered urban agriculture in the study because it is primarily occupied by residential houses, offices, and other facilities with and without farming space, and the second category is considered a peri-urban area because it is located away from the city core area and consists primarily of some residential houses with comparatively larger farming areas than the urban area (Tewodros, 2007). The first category is the focus of this research.

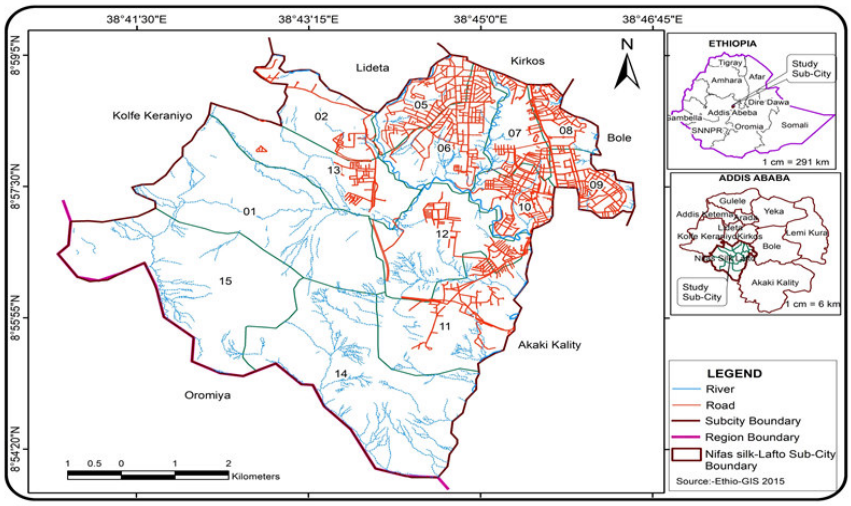

Fig. 1 Map of Nifas Silk Lafto sub city, Addis Ababa, Ethiopia (Source: AACA, 2020).

2.2. Sampling procedure and sample size

According to AAFUADC (2021), out of the total eleven sub-cities, Nifasilk-Lafto vegetable-producing households in the thirteen weredas (the smallest administrative unit in Ethiopia's urban hierarchy) has the highest vegetable production performance in the town, which shows the host weredas are inhabited by people practicing UA. The number of sample households, assuming 95% level of confidence and 5% level of sampling error, was estimated to be around 388 using a simplified formula (Yamane, 1967).

$$n = \frac{N}{1 + N(e)^2}$$

Where N, n and e stand for number of total vegetable-producing households in the sub-city, sample size and sample error, respectively.

2.3. Data sources and data collection tools

For this study, both quantitative and qualitative data were collected from primary and secondary data sources. Questionnaires, focus group discussions, and field observations were used to collect primary data at the household level from Nifas Silk Lafto sub-city Weredas in the urban targeted vegetable producers. Secondary data was collected from existing sources with an intensive desk review of published and unpublished literature such as peer-reviewed journals, conference papers, government records, and research reports. Household surveys with 388 vegetable producers were used to collect quantitative data in order to investigate and quantify the effects of the socioeconomic and demographic characteristics of households on vegetable production. In addition, each focus group consisting of six vegetable producers was conducted using a pre-designed checklist.

2.4. Data analysis

Thematic content analysis was used to analyze qualitative data collected through focus group discussions, and field observations. The data was organized, summarized, analyzed, interpreted, and used to support the survey results. The quantitative method, on the other hand, focuses on numerically collected and recorded data. To test the relationship between the study variables, the data collected through the household survey was analyzed using descriptive statistics and multinomial regression.

2.5. Econometric model specification

Some potential explanatory variables, such as the source of water for urban farming and farming opportunities on the household vegetable production condition, were determined using multinomial logistic regression (Gujarati, 2004).

The multinomial model is defined in this study as follows:

$P^{(i)} = 1/1+e^{-z(i)}$ ..... (1)

Where

p (i) is a probability of a household vegetable production.

e represents the base of natural logarithms and.

Z (i) is a function of n- explanatory variables (X_i) and is expressed as:

$Z_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots\ldots + \beta_n x_n$ ..... (2)

β_0 is an intercept, β_1, β_2 and β_n are "slop" coefficients, and x_1, x_2 and x_n are related household characteristics.

Where β_0 is the intercept and β_i is the "slope" parameter in the model, which is estimated using the maximum likelihood method. The slope describes how the log odds in favour of household contentment change when the independent variables change by one unit.

2.6. Description of the study Variables

The dependent variables in this study are the overall vegetable production and the purpose of vegetable production. Urban farmers perceived that these vegetable production practices contributed to income, household food availability, and job opportunity.

The variables, along with other factors such as household demographics and socioeconomic characteristics, are assumed to influence vegetable production. Based on a review of related literature, ten potential explanatory variables (types of vegetable production, land size in $m^{2,}$ source of land, housing status, gender of the house head, age of the house head, households' size, educational status, employment status, and marital status) were identified as factors explaining vegetable production in the study area.

Table 1: Dependent and Independent variables descriptions

Dependent variable	***Description***
Vegetable production	vegetable production that practice by households in the area
Purpose of vegetable production	For food, income and job creation
Total vegetable production in Kg	The amount of vegetable produced in Kg
Source of water for urban vegetable faming	1= River water, 2= Top water, 3= Underground water, 4= Harvested rainwater, 5= Recycled water
Urban vegetable farming	vegetable benefits from production
Independent variable	*Description*
Types of vegetable production	name of vegetables produced by households
Land size in m^2	1=100-300, 2= 301-600, 3=601-1000, 4= > 1001
Source of land	1= river side, 2= park, 3= damped area, 4=Private residential, 5=
Housing/shelter status	1= own house, 2= private rented house, 3= Wereda rented house
Gender of the house head	Dummy; 1 if head is male 0 if female
Age of the house head	1=21-30, 2=31-40, 3=41-50, 4= >50
Households Size	Number of members of the household (Continuous)
Educational status	0= unable to read and writing,1= non-formal education but reading and writing,2= primary,3= secondary,4= diploma,5= bachelors,6=
Employment Status	Dummy; 1 if yes, 0 if otherwise
Marital status	1= married, 2= single, 3= divorce

Age: Age can have an effect on agricultural output. A farmer's productivity and managerial ability may improve as he or she ages and gains experience. Later in life, productivity may decline. An early study by Loomis, supported by Long, discovered a cyclical relationship between farmer age and farm size, use of some inputs, and output (Tauer, 1995).

Sex: Women play important and diverse roles in agriculture, particularly in vegetable production, but they have unequal access to productive resources and opportunities in comparison to men. Closing these gender disparities would benefit both women and agriculture. Women make up a large portion of the measured contributions to agricultural labor, and their proportion of the agricultural labor force has a positive impact on national-level agricultural productivity (IFPRI, 2014) .

Education: Education, as is widely acknowledged, has a positive impact on agricultural output. Researchers have investigated a number of mechanisms by which education influences agricultural output. Education improves farmers' ability to obtain, decode, and comprehend information, allowing them to make better use of available data to develop relevant solutions to production, market, and financing challenges (Ninh, 2020).

Marital status: It was discovered that married women produce a relatively greater amount of cash crop output than unmarried women because husbands prefer to have more land under cash crops than food crops (Kiriti *et al.,* 2003).

Employment status: The 2020 urban employment and unemployment survey shows that Addis Ababa city has a 19.3% unemployment rate, and the youth unemployment rate (age 15–29 years) is high (WFP, 2020). Vegetable cultivation has led to the generation of employment for the people employed in different processes from production to the final transaction of the product and has become a source of income (Khan *et al.,* 2012).

Housing: The boom in housing demand in the early twenty-first century resulted in an increase in land

demand by housing construction companies. This has a significant impact on farmers' decisions to sell their farmland endowment and leave farming (Bekkerman, 2007).

Family size: Household farming decisions are influenced by demographic and household characteristics. In terms of household size, it is argued that a larger household is more likely to farmland intensively and conduct critical farming operations at the right time than a smaller household (PFE, IIRR, and DF, 2010).

Land Size: Farmland is the foundation of farmers' livelihoods and the most basic agricultural resource, but it is now becoming a constraint in agricultural production. The food produced on the small farm is not keeping up with the growing population (Gemechu, 2017).

3. RESULTS AND DISCUSSION

3.1. Demographic and Socio-economic characteristics of the respondents

The results presented in Table 2 show that the majority of vegetable production respondent households (59.3%) were male, with the remainder (40.7%) being female. This finding is consistent with the work of Banchamlak & Akalu (2022). As a result, male dominance appears to be greater in this sector. Furthermore, Mumbi *et al.* (2006) claim that male farmers are taking the lead in vegetable production and marketing.

Age was an important factor in UA farming, particularly in vegetable production. According to the study, age groups 31-40 account for 34.5% of total respondents, while age groups 21-50 account for 81.0% of total respondents in the working age group (Table 2). Godfrey *et al.* (2012), on the other hand, report that younger generations are less likely to participate in UA. Godfrey went on to say that the elderly are the primary participants in urban vegetable production. When he explained why, he attributed it to the youth's negative attitude, perception, and belief toward farming, as well as their lack of knowledge. Again, the youth saw farming as time-consuming and exhausting. Table 2 further explained that 19.0% of respondents were over 50. As such, the survey results indicated that the working age group was the major factor in the capacity of vegetable production. This finding is consistent with the findings of Tauer (1995), who used data from the 1978 Agricultural Census to conclude that farmers' productivity increased and then decreased as they aged, with farmers aged 35 to 44 being the most productive..

Table 2 also revealed that 67.8% of vegetable producers were married, indicating that urban vegetable production was led by married households. The findings are consistent with those reported by Baba *et al.* (2010), Pedzisai *et al.* (2014); Filmon & Mitke (2022) , who reported that married farmers engaged in more vegetable farming to support their families. Furthermore, approximately 21.3% of those polled were single, while 10.9% were divorced.

Table 2: Households' demographic characteristics

Item	*Categories*	*Frequency*	*Percent*
sex	male	227	59.3
	female	156	40.7
	21-30	86	22.3
	31-40	133	34.5
age	41-50	93	24.2
	> 51	73	19.0
	married	261	67.8
marital status	single	82	21.3
	divorce	42	10.9

According to the results in Table 3, 30.9% of respondents were illiterate and had no formal education. 56.2% of the population has completed primary and secondary school. In terms of higher education, 32.0% of respondents had completed secondary school. There were approximately 7.0% diplomas, 4.4% bachelor's degrees, and 1.5% postgraduate degrees. Masuku & Xaba (2013) emphasized the importance of education in farming, claiming that it allows farmers to adopt change and innovation more quickly than the uneducated. According to Table 3, 55.0% of urban vegetable farmers had a family of 4-6 members, 34.4% had a family of 1-3 members, and 17.8% had a family of 7 or more. Household size can be an important source of family labor in farming, which is still a common practice among farmers to reduce labor costs. Similar results have been reported by Uuld *et al.* (2021); Filmon & Mitke (2022).

Table 3: Households socioeconomic characteristics

Item	*Categories*	*Frequency*	*Percent*
employment	civil servant	19	4.9
	work for private	78	20.2
	vegetable farm	247	64.0
	home maker	22	5.7
	student	1	0.3
	retired	15	3.9
	union on VP	4	1.0
Educational status	unable to read and writing	57	14.7
	non formal education	63	16.2
	primary	144	37.1
	secondary	74	19.1
	diploma	27	7.0
	bachelors	17	4.4
	postgraduate and above	6	1.5
Farming experience	up to 5 years	272	73.9
	up to 10 years	44	12.0
	up to 15 years	13	3.5
	>15 years	39	10.6
Housing status	own house	234	61.3
	private rented house	138	36.1
	kebele rented house	10	2.6
Land size	100 - 300 m^2	302	79.1
	301 - 600 m^2	38	9.9
	601 - 1000 m^2	7	1.8
	> 1001 m^2	35	9.2
Family size	1-3 family	133	34.4
	4-6 family	213	55.0
	7-9 family	38	9.8
	> 9 family	3	8.0

As shown in Table 3, the main occupation of 64.0% of households was vegetable production; 20.2% of households work in the private sector; and 4.9% and 5.7% of households are public servants and homemakers, respectively. The results further revealed that 3.9% were retired, 1.0% was working as union members, and 0.3% was students. Based on the findings, vegetable production is a well-known mechanism for household resilience in the study community. 73.9% of participants have five or fewer years of experience in vegetable production, indicating that vegetable farming capacity has increased in the last five years, which shows that the greenery coverage of the study area has increased.

Urban vegetable farming practices are strongly linked to the ownership of private houses, which allows participants to have permanent and extra farming space. In the study area, 61.3% of the livelihoods that practice urban vegetable production live in their own house, 36.1% live in privately rented houses, and 2.6% live in Kebele (government) rented houses. The majority of participants in this study have small land holdings. According to Table 3, more than 79.1% of respondents own 100-300 m^2 of land, 9.9% own 301- 600 m^2 of land, 1.8% own 601-1000 m^2 of land, and 9.2% own 1001m^2 or more of land.

3.2. Attributes of Urban vegetable produciton

The simplicity of the production system was the main reason for producers to engage in vegetable production. According to Table 4, more than 43.1% of respondents agreed that vegetable production is simple and has a low barrier to entry. According to Table 4, 59.8% of respondents farm vegetables twice a year, while 32.6% produce them three times a year. The good news is that 92.4% of participants had an opportunity to farm vegetable production more than twice per year, thereby implying intensification, while 7.5% only produce once per year. This result is in line with "The Growth and Transformation Plan I (GTP-I)," which mainly focused on accelerated growth in agricultural productivity for ensuring food security and supporting the food industry through increasing crop production, enhancing crop productivity by applying good agricultural practices, and improving extension services (MFED, 2010; Bezabih *et al.* 2017).

Table 4: Reasons for respondents' *involvement in production* and frequency of *vegetable farming per year*

Items	*Frequency*	*Percent*
because of simplicity	79	20.5
multiple production per year	140	36.4
simplicity and multiple production per year	166	43.1
Produce once per year (1x)	29	7.5
Produce two times per year (2x)	231	59.8
Produce three times per year (3x)	126	32.6

Table 5 presents the area where the study farmers have produced vegetables. The result shows that 61.3% of farmers used riverside areas for vegetable production, using the river for irrigation purposes and, at the same time, ensuring the sustainability of the river. 45.9% of producers farm in their own private residential areas. There were also damped areas (28.6%), park areas (8.8%), and condominium residential areas (3.9%). This study is supported by Dejen (2020).

Table 5: Producers sources of land (*respondents may choose more than one source*)

Item	*Frequency*	*Percent*
river side	238	61.3
park	34	8.8
damped area	111	28.6
Private residential	178	45.9
Condominium	15	3.9

3.3. Types of vegetables produced and production capacity

According to Figure 2, the majority of respondents produce one or more vegetable products. The vast majority of respondents (91.0%), however, produced leafy vegetable products (kale, chard, and lettuce). Selamawit *et al.* (2021) support this study, while other vegetables produced by urban vegetable producers, including onions, carrots, potatoes, and peppers, also dominate production.

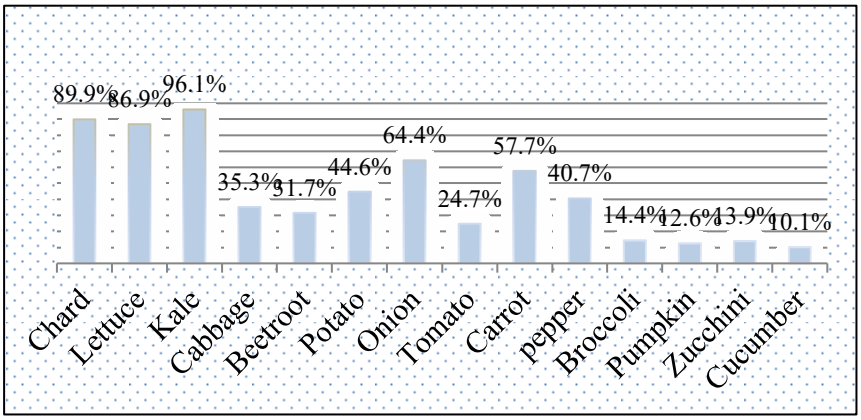

Fig: 2 Different varieties of vegetable production in the study area

The household's one-meter-per-square-meter production capacity is low, as shown in Table 6, and the standard deviation has clustered around the mean. The values appear to be close to the mean because the standard deviation is low. According to descriptive statistics, potatoes have the highest yield (12 kg per square meter), while lettuce, zucchini, and cucumber have the lowest (4 kg per square meter).

Table 6: Total vegetable production per square meter

Types of vegetable	*Maximum*	*Mean*	*Std. Deviation*
Chard	10	2.37	1.301
Lettuce	4	2.21	1.054
Kale	8	2.62	1.179
Cabbage	5	1.34	1.893
Beetroot	6	1.05	1.668
Potato	12	2.29	2.895
Onion	8	1.97	1.773
Tomato	6	.70	1.295
Carrot	10	1.76	2.003
Pepper	8	.94	1.317
Broccoli	5	.46	1.168
Pumpkin	10	.59	1.670
Zucchini	4	.39	1.017
Cucumber	4	.28	.882

3.4. Determinants of vegetable producers using the result from cross-tabulation

Male producers were more active than female producers in terms of production capacity. 77.8% of men, compared to 22.2% of women, had the opportunity to produce three times per year. One of the factors that influenced the producer's capacity for vegetable production was age. 30.2% of respondents aged between 31 to 40 produce vegetables three times per year, while those aged 21 to 30 produce only 15.9%, indicating that as producers' ages increase, their annual production capacity increases. Respondents (60.3%) with primary and secondary education produce three times more per year than those with a low level (30.2) of formal education. The proportion of married respondents who produced three times per year was 67.5%, while 23.8% were single and 8.7% were divorced.

UA, particularly vegetable production for self-sufficiency, was more popular. According to the data, 94.7% of civil servants (government employees) and 95.5% of homemakers in the study area grow vegetables for their own consumption. Small-landholder vegetable producers (79.1%), with land sizes ranging from 100 to 300 m^2, primarily produced leafy vegetables (chard, lettuce, and kale).

The vast majority (76.6%) of vegetable producer respondents engaged in self-consumption and income-generating activities (Table 7). According to the study, the majority of respondents with 5 or fewer years of experience (61.9%) agreed that the sectors were important for job opportunities. According to Ibrahim *et al.* (2021), vegetable production is very important for income, including employment, self-consumption, and hobbies.

Table 7: Self-consumption and income, and employment opportunities from cross-tabulation with farming experience

	What are the purposes for your engagement in vegetable Production?					
	Self-consumption and income					
Year of farm experience	strongly disagree	disagree	neutral	agree	strongly agree	Total
< 5 years	19	20	22	112	99	272
> 5 and <10 years	8	0	10	10	16	44
> 10 and < 15 years	0	0	2	3	8	13
> 15 years	2	3	0	2	32	39
	Employment opportunity					
< 5 years	13	49	41	89	78	270
> 5 and <10 years	10	10	5	7	12	44
> 10 and < 15 years	1	8	0	0	4	13
> 15 years	3	6	3	8	19	39

Table 8 shows that river water (p = 0.003), top water (p = 0.008), underground water (p = 0.009), and recycled water (sing 0.000) all had statistically significant effects on vegetable production in sample households. A sample household whose practices included urban vegetable farming for various opportunities was statistically significant for knowledge sharing (p = 0.004), job creation (p = 0.002), household wellbeing (p = 0.006), and food security stability (sing 0.000). Amsalu (2020) reported that it is important to note here that Addis Ababa with a 100% urban population is the biggest political, industrial, and commercial centre of the country, partly explaining the small share of agriculture in its overall GDP.

Table 8: Logistic regression estimates opportunities and water sources for vegetable production

Dependent Variable: Source of Water for Urban Vegetable Faming						
Explanatory Variables	***B***	***S.E.***	***Wald***	***df***	***Sig.***	***Exp(B)***
River water	1.656	.567	8.537	1	.003	5.239
Top water	1.515	.569	7.097	1	.008	4.549
Underground water	2.205	.843	6.848	1	.009	9.074
Harvested rain water	20.667	7639.682	.000	1	.998	945723577.660
Recycled water	-.998	.286	12.176	1	.000	.369
Constant	-49.846	15279.365	.000	1	.997	.000
Dependent Variable: Urban Vegetable Farming Opportunities						
Explanatory Variables						
Producers' knowledge sharing	1.448	.505	8.217	1	.004	4.254
Create jobs opportunity	-1.549	.512	9.150	1	.002	.212
Vegetable Production for access intake	.108	.458	.056	1	.814	1.114
Vegetable production increases wellbeing	1.250	.458	7.440	1	.006	3.489
VP for food security stability	2.036	.502	16.458	1	.000	7.660
Constant	-5.079	1.466	12.008	1	.001	.006

4. CONCLUSION AND RECOMMENDATIONS

The aim of the study was to identify factors determining vegetable production setups and attributes of producers in the study area. According to the survey results, there are many newly engaged households in the sector. Males were the most dominant participants, but female participation was also encouraging. In Addis Ababa, young producers with low levels of education tend to dominate vegetable production. Urban vegetable farming practices have a close relationship with privately owned houses, which allow participants to acquire more permanent and larger farming spaces. Family size and marital status were important factors in vegetable production because they were the sources of family labor. Most vegetable growers have small plots of land and consume the majority of their produce at home. The most commonly grown vegetables in the area are leafy vegetables (kale, chard, and lettuce). More than half of those polled have the opportunity to farm twice or more per year, which is critical for income, employment, and self-consumption.

Governments and development partners should also collaborate to increase household capacity and diversify livelihoods by endorsing policies that ensure urban farm households and vulnerable communities have access to the necessary inputs and resources for better application of production strategies in response to increased vegetable production capacity. Lastly, Addis Ababa is entirely dependent on regional states for consumption. However, the capital has the potential to feed itself. The main challenges are not only a lack of space or technology but also a negative attitude and a lack of new ideas. I do believe this study shows promise and may bring some clarity on ways to enhance vegetable production in this region to bring greater economic stability and food security.

Declarations

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Data availability statement

Data will be made available on request.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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