International Scholars Journals

Global Journal of Food and Agricultural Sciences Vol. 9 (5), pp. 001-006, May, 2022. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

An Assessment on Factors Affecting Urban Vegetable Production in Harare, Zimbabwe

Chagwiza Godfrey[1*], Zivenge Emmanuel[1], Chivuraise Chipo[1], Munyati Vincent[1] Joseph P Musara[1]

[1]Bindura University of Science Education, Department of Agricultural Science Bag 1020 Bindura, Zimbabwe.

Accepted 20 September, 2021

Urban agriculture has become increasingly important to the residents of Zimbabwe's cities. We conducted a survey on the factors affecting urban vegetable production in Harare, Zimbabwe. Our goal was to assess the characteristics of Zimbabwe's participants in urban agriculture and the effectiveness of NGO and government initiatives promoting urban agriculture so as to assist poverty alleviation policy makers. Data was gathered from the archives of 10 Non- Governmental Organizations (NGOs). Stepwise multiple linear regression model and K- means cluster were used to analyze the data gathered. Results showed that income, home ownership, sex, age, and market as a primary source of vegetables significantly affect residents' likelihood to participate in urban vegetable production. In the case of urban youth, it was found that this group is not likely to participate in urban vegetable production, even though they are the intended beneficiaries of many NGO programs promoting the activity. In addition, it was found that non-homeowners are not participating in urban vegetable production even though this is a low income group that could benefit from participation.

Keywords: Urban vegetable production, Harare residents

INTRODUCTION

Zimbabwe has a population of more than 11.6 million, with 33% of the population living in urban areas (Zimbabwe National Vulnerability Assessment Committee, 2004). Modernization of agriculture has introduced many new and exotic varieties of vegetables to both the countryside and to cities where urban agriculture is often an important source of sustenance and income. Urban agriculture can be defined as all forms of agricultural production in or directly adjacent to a city that provide products for sale in urban markets or provide a source of sustenance for the city dwelling growers themselves (Boland, 2005). In Zimbabwe, corn and a variety of vegetables are common crops for urban agricultural production. This research focuses specifically on the production of leafy vegetables such as cabbage, mustard greens, arugula and spinach, which are among the most important urban vegetable crops. Leaf vegetables are a common choice for urban production as they mature quickly and are not labour intensive, providing a quick source of income and sustenance. Across Zimbabwe, smallholder urban vegetable production has become a quickly expanding enterprise. Increasing urban populations have led to higher demand, allowing vegetable crops to command high prices at local markets and generate income throughout the year.

*Corresponding Author's E-mail: chagwizag@gmail.com

Table 1. House ownership

		Frequency	Percent	Cumulative Percent
Valid	own house	227	45.4	45.4
	rent house	117	23.4	68.8
	parents own house	156	31.2	100.0
	Total	500	100.0	

In addition to generating income, urban vegetable production also provides household nutritional security since vegetables are rich in vitamins, minerals, and fibre, essential components of a balanced diet (Salunke and Kadam, 1998, Drechsel et al, 2007). According to Tribe (1994), vegetables are an important source of nutrition for urban families living in poverty. Some of these residents grow enough for themselves and have enough surplus to sell and generate income. Urban residents access leaf vegetables either through their own production or from a market. Leaf vegetables may be sold through a formal market, such as a small shop or large supermarket, or they may be sold through an informal market, such as that provided by street vendors.

Approximately 80% of Zimbabwe's urban residents live below the poverty line (Consumer Council Zimbabwe, 2009), earning an average income of US$120 per month. The current poverty line is US$520.00 per month. With so many people living in poverty, urban vegetable production, and particularly the production of leaf vegetables has become an important source of sustenance. Sanyal (1986) shows that leaf vegetables provide a significant portion of the daily nutritional requirements to Zimbabwe's urban poor. Acquaah (2002) argues that backyard leaf vegetable production has a number of advantages; it results in satisfaction and a sense of achievement, reduces food expenses, provides valuable time for family interaction, and provides an activity around which community clubs may be formed. Several non-governmental organizations (NGOs), such as the Community Technology Development Association (COMMUTECH) are promoting urban vegetable production by providing inputs to farmers and space to practice urban agriculture.

Purpose of Study

The purpose of this study is to provide policy makers with information relevant to urban vegetable production in Zimbabwe. Understanding the characteristics of intended beneficiaries is important when formulating poverty alleviation policies. This study is intended to help organizations promoting urban vegetable production assess who is benefiting from the support they provide.

METHODOLOGY

Our survey was carried out in Harare's high density suburbs, namely Highfield, Glen Norah, Budiriro and Glen View. Between these suburbs are large gardens where extensive vegetable production takes place. The majority of the land is owned by Africare and Mercy Corps and leased to vegetable producers. However, wetlands and land along streams owned by the city of Harare are also used by urban vegetable farmers without leasing. Members of these gardens come from the surrounding suburbs and are supplied with inputs and money by NGOs. Data was collected through review of NGO general beneficiary database records on 500 urban vegetable production participants to gather data on employment status, income, house ownership and reasons for engaging in vegetable production. Urban vegetable production participants were selected randomly after assigning each participant a random number which were later selected randomly. Data review were conducted with 10 participating NGOs, namely COMMUTEC, Africare, Mercy Corps, Oxfam, Care International, Catholic Relief Services, United Nations Children Fund (UNICEF), International Centre for Research in Agroforestry (ICRAF), Protracted Recovery Programme (PRP) and Trees Africa in order to gather information on the kinds of support they give and the intended beneficiaries of this support. A stepwise multiple linear regression model was fitted to data from the NGO. In addition, data from the NGOs' general beneficiary databases reflected vegetable producers' sex, age, employment status, income and home ownership status and were analyzed using K- means cluster in order to classify those participating in urban vegetable production.

RESULTS

Most urban vegetable producers own houses in Harare's high density suburbs that surround the large garden spaces as shown by table 1. Few urban vegetable production participants rent houses (23.1%). A significant number of urban vegetable farmers live in their parents' houses.

Table 2. Frequencies of urban vegetable participants by age

		Frequency	Percent	Cumulative Percent
Valid	46-60	281	56.2	56.2
	31-45	135	27.0	83.2
	16-30	84	16.8	100.0
	Total	500	100.0	

Table 3. Employer Income frequency

		Employer		
		Government	No employer	private
		Count	Count	Count
income	0-300	281	0	0
	301-600	63	0	0
	601-900	9	51	0
	901-1200	0	24	0
	1201-1500	0	6	18
	1501+	0	0	48

Elderly people (46 – 60 years) are the main participants of urban vegetable production (Table 2). Middle aged participants constitute 27% of the total participants and the 16.8% of the total participants is of age between 16 – 30 years.

The main employer of urban vegetable farmers is the government (70.6%) and private employers constitute only 13.2% whilst 16.2% is retired and non- employed. A cross tabulation of employer and income (table 3) shows that the least earning participants are employed by the government. Few urban vegetable participants earn above US$1500 and these are employed by private organizations.

Figure 1 shows that majority of urban vegetable growers participate in the gardens in order to get income. A significant number of people are participating in urban vegetable production to reduce costs on vegetables. Some farmers about 32.8% of the total participants take part of the produce for family consumption.

DISCUSSION

Home ownership is significant at 1% as an indicator of participation in urban vegetable production. This might be attributed to the relative stability of home owners as compared to the relative transiency of renters, or it may indicate that space is a limiting factor and home owners acquired land along wetlands and streams before renters arrived in these suburbs. If home ownership increases, it is possible that participation in urban vegetable production will also increase. The *t*-value of 9.422 (See Table 4) shows that home ownership is an important factor affecting vegetable production in the urban area of Harare.

Both income level and market as the primary source of vegetables show a negative relationship with urban vegetable production and are significant at 1%. The negative relationship between market as the primary source of vegetables and participation in urban vegetable production can be explained by availability. If markets shrink or cannot keep up with demand, availability of vegetables becomes limited, and urban residents are motivated to produce their own vegetables for family consumption. The negative correlation between income level and participation in urban production of leaf vegetables indicates the greater need for supplemental income and nutrition among those of lower incomes and the tendency for people to prefer substitutes such as beef, fish, pork and chicken over leaf vegetables as income increases.

Income is the strongest indicator characterizing likelihood of urban residents to participate in vegetable production (F

Table 4. Summary of the linear regression model of factors affecting urban vegetable production*

Factor	Coefficients	T- value	P- value
Constant	0.696	7.965	0.000
House ownership	1.104	9.422	0.000
Market place as source of vegetables	-0.582	-6.330	0.000
consumption	0.524	4.116	0.000
Income	-0.398	-3.253	0.002
sex	0.198	2.371	0.021
age	0.186	3.221	0.023

* The linear regression model compares the correlation between the factors listed and residents' likelihood to participate in vegetable production based on results of household questionnaires and NGO interviews.

Table 5. ANOVA* Summary of classifying factors from NGO databases

	Cluster		Error			
	Mean Square	Degrees of freedom	Mean Square	Degrees of freedom	F**	Sig***
Age	27.614	1	.201	58	137.637	.000
Sex	5.455	1	.165	58	33.143	.000
Family size	6.700	1	.267	58	25.100	.000
Employer	27.409	1	.161	58	170.503	.000
Income	163.006	1	.655	58	248.948	.000
House ownership	21.097	1	.446	58	47.269	.000
Market as source of vegetables	8.297	1	.101	58	81.752	.000

*****ANOVA is an analysis of variance which tests the assumption that the mean of the factors that affect urban vegetable production is equal.
**F stands for Fisher statistic test which establishes whether there or not there are differences between group means.
***Sig stands for significance and is the probability value. The column with sig is the most important column in this table.

value of 248.948, see Table 5). Our data indicate that those in lower income brackets are more active in urban vegetable production. Although across Zimbabwe renters are generally regarded as lower income earners than home owners, we did not find that they participate in urban vegetable production to supplement their income and food security as is the argument presented by Klemesu and Maxwell (2000).

Age and sex (Table 4) show a positive relationship (0.186 and 0.198 respectively) with urban vegetable production that is significant at 5%. As residents become older they are more likely to engage in urban vegetable production, a finding that is supported by the argument in Acqaah (2002) that backyard vegetable production is a fulfilling activity that brings the family together. We also found that the majority of participants in urban vegetable production are women, which may be due to the fact that in Zimbabwean culture women are often considered responsible for household duties. This finding is supported by other researchers. In a study conducted in Gweru, Zimbabwe on a population with characteristics similar to the participants of this study, King (1997) found that women are the main participants in urban agriculture. Mkwambisi, et al (2007) also found that women participate in urban agriculture more frequently than men in a study assessing a number of Southern African countries, including Zimbabwe.

Employment status is another important characteristic related to participation in urban vegetable production. Our findings indicate that most participants in urban vegetable production are unemployed. Both employment status and age are equally correlated with likelihood to participate in urban vegetable production, as indicated by the equal F values of 170.503 (Table 5). This may be explained by the fact that many elderly residents are unemployed. King (1997) showed that older people are more likely to engage in urban agriculture, a finding that is supported by the relationship between age and employment status. In Zimbabwe it is common for elderly retired people who own houses to participate in urban vegetable production as they often prefer living in cities rather than rural areas. In addition, some are foreigners from Malawi, Mozambique and Ethiopia who do not have rural homes. Since many of the people in this demographic receive no income from

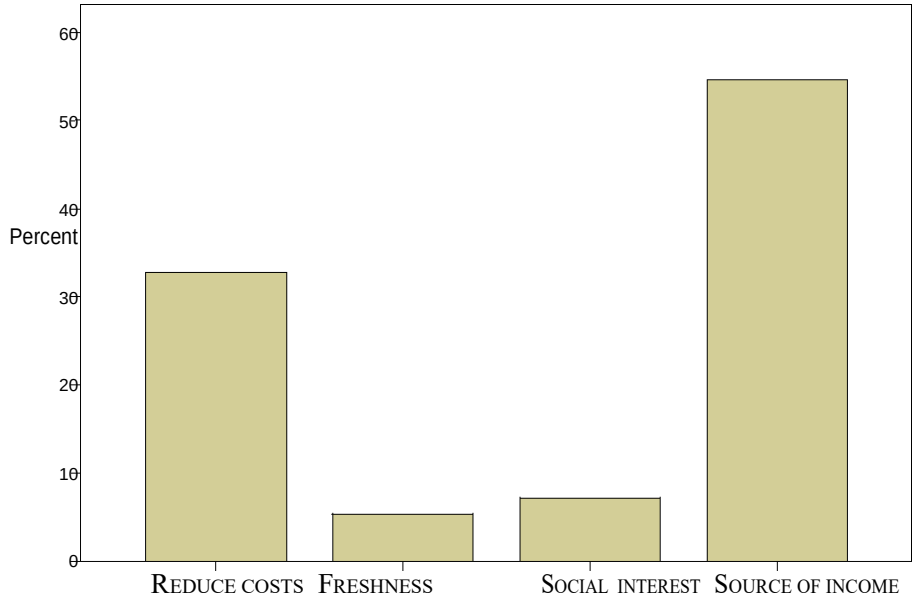

Figure 1. Reason for urban vegetable production

either the government or children, vegetable production can be an important source of food.

Benefits of urban vegetable production to poor.

Africare and Mercy Corps provide transportation and seek markets for vegetables from the urban gardens in Harare. Farmers then repay transport costs after selling their produce. Many of the urban vegetable producers indicated that they are benefiting from the initiative. After surveying 500 farmers to assess the benefits urban vegetable production has brought to residents, it was found that most farmers believe their living standards are improving due to participation.

Based on survey responses, we conclude that urban vegetable production is an important source of income for poor urban residents. Figure 1 show that a significant number of farmers participate in urban vegetable production as a source of income. A more comprehensive study needs to be carried out to fully assess the impact urban vegetable production has on the living standards of poor urban residents.

Youth and urban vegetable production.

Our research indicates that there is limited participation in urban agriculture from younger generations. Table 2 show that 56.2% of those participating in urban vegetable production are people between 46 and 60 years of age, while only 16.8% of participants are between 16 and 30 years, and 27% between 31 and 45 years. Van Veenhuizen and Danso (2007) argue that urban agriculture provides employment opportunities for economically disadvantaged and unemployed urban youth. Our results show that older people are more likely to be involved in urban vegetable production, suggesting that this may not be an ideal area to create desirable job options for youth. Youths in our study area engage in other activities such as selling prepaid cell phone or laptop airtime in the streets and regard urban vegetable production as time consuming and energy-intensive as compared to other income sources.

Policy makers should consider promoting education programs focused on teaching youth about the benefits of participation in urban vegetable production, and stakeholders should consider ways of motivating the youth to engage in urban vegetable production. On the other hand, the funding organizations supporting urban vegetable production as a potential employment opportunity for urban youth should also consider other avenues that appear more attractive to unemployed youth such as selling prepaid cell phone airtime and other small enterprises that generate income quickly.

Income and urban vegetable production

After classify those active in urban vegetable production according to age, sex, family size, employer, income and house ownership, the results showed that income is the strongest indicating factor with an F value of 248.9 (Table 5). This indicates that people who earn lower incomes are more likely to participate in urban vegetable production. Type of employment is also an important indicator of residents' likelihood to participate in urban vegetable production. For the purpose of this study, types of employment were divided into government, private and self. Our analysis showed that government workers comprise about 70% of the total participants of urban vegetable production. This could be attributed to the lower wages of those classified as government employed, such that urban vegetable production is needed as a supplement to their income. This could also be related to government housing schemes, or to the fact that many of those classified as government workers are retired or pensioners. In the case of pensioners, monthly allowances are so low such that it is not possible to live off of this income alone. Policy makers should consider the connection between urban vegetable production and employees of government institutions.

CONCLUSION AND RECOMMENDATIONS

Our results indicate that there is a negative relationship between income and urban vegetable production; as income level goes down, individuals become more likely to participate in urban agriculture. This activity provides an important source of nutrition as well as healthy social activity. As many urban residents live below the poverty level, the government should work in collaboration with NGOs to provide space and inputs for urban vegetable production. In addition, there is a need to promote urban vegetable production as a fun, healthy and rewarding family activity that can bring benefits to people of all ages and all income brackets so that it does not become stigmatized as an activity only for the poor.

Policy makers need to consider the important contribution of urban vegetable production to food security as more of Zimbabwe citizens fall below the poverty line. Residential areas and housing installations should be designed to allow space for urban vegetable production. In addition, if NGOs are to be successful in their endeavour to alleviate poverty, policies should be put in place to support the marketing and sales of urban agricultural products. Policies should also be developed to support extension agents to teach the community the benefits of urban vegetable production and share information on more sustainable methods for vegetable farming.

Further research should be carried out to assess contributions of urban vegetable production to food security in Zimbabwe. There is also a need for the groups promoting urban vegetable production as a beneficial activity for youth to address the negative attitude that urban youth currently express in regards to participation in agricultural activities. Future research addressing how to educate youth on the merits of participating in urban vegetable production could be valuable to NGOs and government organizations working in the area.

REFERENCES

Acquaah S (2002). Horticulture Principles and Practices. Pearson Education, New Delhi.

Boland J (2005). Urban Agriculture Growing Vegetables in Cities. Agromisa Foundation, Wageningen.

Consumer Council of Zimbabwe (CCOZ) (2010). [http://Poverty_datum_line, 26 May 2010.]

Drechsel P, Graefe S, Fink M (2007). Rural- urban food, nutrient and water flows in West Africa, IWMI Research Report 115, Colombo Sri Lanka 35p.

King B (1997). Urban Agriculture in Gweru. Enda, Harare.

Klemesu MA, Maxwell D (2000). Accra: Urban agriculture as an asset strategy supplementing income and diets. In Nico Barker, Marielle Dubbelling, Sabine Gindel, Ulrich Sabel- Koschella and Henk de Zeeuw (eds), Growing cities, growing food- Urban agriculture on the policy agenda. DSE, Eurasburg, Germany, pp. 183 -208.

Mkwambisi DD, Fraser EDG, Dougill AJ (2007). Urban agriculture and poverty reduction: Evaluating how food production in citis contributes to livelihood entitlements in Malawi No. 04 SRI PAPERS. Sustainability Research Institute, School of Earth and Environment, The University of Leeds, Leeds, LS@ 9JT, United Kingdom.

Salunkhe DK, Kadam SS (1998). Handbook of Vegetable Science and Technology Marcel Dekker Inc, New York.

Sanyal B (1986). Urban Agriculture in East Africa, Food and Energy, UN University Publishers, Tokyo.

Tribe D (1994). Feeding and Greening the World: The Role of International Agricultural Research. Biddles Limited, London.

van Veenhuizen R, Danso G (2007). Profitability and sustainability of urban and peri- urban agriculture. Rome, FAO Report 19, pp 95.

Zimbabwe National Vulnerability Assessment Committee In Collaboration With SADC FANR Vulnerability Assessment Committee (2004). Zimbabwe Urban Areas: Food Security and Vulnerability Assessment- September 2003.Urban Report No. 1, Harare.