

Grade 12 Learners' Perceptions of the Effect of Urban Agriculture on Food Security and Poverty Eradication

Ntombomzo O. Beni¹ and Emmanuel O. Adu²

¹*Faculty of Education, University of Fort Hare, East London Campus, South Africa*

²*Faculty of Education, University of Fort Hare, P.O. Box 1005, East London 5200, South Africa*

E-mail: ¹<ntombomzibeni@gmail.com>, ²<eadu@ufh.ac.za>

KEYWORDS Community Revitalisation. Food Security. Perception. Poverty Eradication. Urban Agriculture

ABSTRACT Agricultural sciences include an alternative source of fresh produce, improved life satisfaction and a way to preserve cultural identity and traditions. This research study seeks to investigate the perception of Grade 12 learners on the effects of urban agriculture on poverty eradication and food security. The study adopts a descriptive survey design. A validated structured questionnaire whose reliability co-efficient is 0.81 was used to collect information. Seventy-eight (78) Grade 12 learners were randomly selected. The study reveals among others that food security and poverty eradication have positive effects on life satisfaction of the respondents. The study recommends that the South Africa Government should make agriculture education as a compulsory subject for grade 10 and 11 learners in rural areas. The study concludes that urban agriculture will help them in building job skills, improving self-esteem and contributing to community revitalization.

INTRODUCTION

Food security is widely believed to be a global issue: availability of food and its nutrient promote good health. Hence, it eradicates influx of sicknesses and diseases. South Africa is not left behind as a country that promotes agriculture especially at the rural areas. The policies of South Africa encourage peasant farming and school gardening so as to solve the problem of food scarcity. South African government believes that school gardening has the potential of eradicating poverty, that is why they include practical agriculture into the school curricula. School gardening also allows young children (learners) to be independent when they leave high school. Instead of depending on government and their parents after leaving school, they will be self-employed as a result of practical knowledge and skills acquired in schools (Muehlhoff and Boutrif 2010).

One of the ways of eradicating poverty is to reduce over-dependence on natural resources by promoting agriculture both at the rural areas and the city which is called urban agriculture. Urban agriculture policy allows national development of agricultural activities across the country. It promotes economic growth and social de-

velopment (Centre for Development Support 2009). Urban agriculture will promote employment and increase the GDP of the country. The modernisation of peasant farming and rural agriculture through the development of infrastructure is called urban agriculture (Adu et al. 2014). South Africa policy on urban agriculture after independence outlined the needs to reduce poverty, inequality and unemployment. This will increase per capital income and enhance gross national product GNP of the country (ANC Agricultural Policy 1994).

Objective of the Study

The purpose of this study was to investigate the learners' perception of the effect of Urban Agriculture on Life Satisfaction. For the purpose of this paper there are two variables that determine life satisfaction which are food security and poverty eradication.

Research Questions

1. What are the perceptions of learners of the effect of urban agriculture on food security?
2. How does urban agriculture eradicate poverty?

Literature Review

Benefits of Urban Agriculture

Urban agriculture can reflect varying levels of economic and social development. In the global north, it often takes the form of a social movement for sustainable communities, where organic growers, 'foodies,' and 'locavores' form social networks founded on a shared ethos of nature and community holism. These networks can evolve when receiving formal institutional support, becoming integrated into local town planning as a 'transition town' movement for sustainable urban development. In the developing south, food security, nutrition, and income generation are key motivations for the practice. In either case, more direct access to fresh vegetables, fruits, and meat products through urban agriculture can improve food security and food safety (Waterford 2015).

Urban agriculture promotes infrastructural development because in an attempt to promote economy of the country, through the exporting of agriculture product, the government has to invest immensely on urban agriculture. Modern equipment to promote plantations of different crops will be imported. Some of this equipment will be given to rural farmers to use during the season of planting and harvesting. Therefore, there will be job opportunities and reduction of poverty level (Battersly-Lennard et al. 2009).

There are many other benefits accrued to urban agriculture, urban agriculture promotes life satisfaction. According to this study, some of the variables that can promote life satisfaction include; poverty eradication, nutrition, food security and employment opportunities. The well-being of the citizens is promoted with the aforementioned variables. Urban agriculture has an effect not only on social well-being of an individual but also emotional well-being. When a man has food to eat, work to do and good relationship with his community members, there will be no emotional trauma, distress and sickness. (Hardman and Larkham 2014).

Waterford (2015) stated that when a man is not idle, such a man will be physically fit. It is as if the person is going to gym every day, urban agriculture makes one to be very active because when man works in a garden or farms, he is doing daily exercise. Many people today ride on bicycles and do some jogging in order to be

physically fit and health wisely good for them. So working in a farm is a form of informal activity that leads to physical exercises. It is widely believed that food heals and at the same time causes sickness. That is why nutrition is very important. The ability of someone to produce food or grow food leads to self-fulfilment and self-esteem (Waterford 2015).

The rapid growth in the population throughout the world calls for a concern about sustainability. Millions of people are suffering from lack of food and basic amenities, some are suffering for mal-nutrition as result of eating stale foods. The realistic solution to these mankind problems is to promote agriculture. Fresh produce from agriculture gives more nutrient and enhance good healthy living. By producing what we need and where we are can hinder problem of avoidable sicknesses. Growing crops within your family house or near to you will allow quick access to it. There will be no transport problem. These would enable people to get the freshest produce money can buy, which will in turn encourage them to eat in season. Carrying farm fresh products for a long distance can affect its value, nutrient and taste. Eating frozen foods can damage one's well-being, rather fresh foods should be eaten always (Pereira 2014).

Another benefit of urban farming is that it can add greenery to cities, reducing harmful runoff, increasing shading, and countering the unpleasant heat island effect. Household farming at the garden allows people to connect to the earth and give people appreciation of knowing where foods are coming from. Farming brings people close to each other and attracts tourism and hospitality. These in turn bring fortune to the economy of the country (Bohn and Vijoen 2014).

Although planners have a long way to go, boosters envision soaring vertical farms that will eventually produce most of what we need within a short walk from home, land in cities is often expensive, especially since gardens tend to contribute to gentrification and rising rents. Urban soils can be loaded with lead, arsenic, and other toxins, requiring remediation or replacement before planting can be done safely. Cramped conditions can limit yields, and getting enough water and sunlight can be a concern. Still if the right combinations of new technology, community support, and economic incentives align, it is possible we may soon be munching on sky-

scraper scallions and avenue arugula (Haward 2014).

The sky is the limit for urban agriculture. What can cities hope to get from community gardens and urban agriculture? Alkon and Norgaard (2009) argued that we need to stop confusing apples and oranges, but we like them both. These scholars stated that, community gardens and urban agriculture is not the same thing. Community gardens are a fabulous manifestation of the commons of how neighbours can come together to create a shared resource that delivers multiple benefits for them that they could not possibly create by themselves. A vibrant community garden makes commensality one of the greatest gifts of urban life through the commons-possible. They hold the view that urban agriculture is completely something else. It is about growing food within the city at a scale that has the potential to put a dent in food security challenges. Scaling up growing food in cities is the laudable goal.

Urban Agriculture and Poverty Eradication

Low-income groups are generally not only poor in a financial sense, the health burden of being poor, the continuing struggle for resources, and the stress associated with providing for themselves and all their dependants have their costs. A strong and effective community can often address many of the deprivations suffered by poor individuals. Many projects have recognised the key importance of participation in terms of encouraging communities to be involved in the processes of decision making and influencing how resources are utilised, which increases the self-esteem of individuals and households, stimulates community organisation and enhances communities capabilities to negotiate with other parties (Vanderschueren et al. 1996).

The mission statement for agricultural policy, as set out in the White paper on Agriculture, was to 'ensure equitable access to agriculture and promote the contribution of agriculture to the development of all communities, society at large and the national economy, in order to enhance income, food security, employment and quality of life in a sustainable manner.' The White Paper on Agriculture recognised that food security consists of both national and household food security (White Paper on Agriculture 2015).

No one can do without food that is why the household food security is very important to any government of the day. The White Paper on Agriculture in 2002 addressed the issue of massive food production to increase exports. Whenever a country increases her export, such country will enjoy economy of scale and have surplus. This White paper also focuses on land reform and land distribution. Availability of land brings about more agricultural activities which may lead to price reduction of foods in the market (Department of Agriculture 2002).

Similarly the White paper for social welfare is in line with that of agriculture, this paper emphasises the need for balanced diet, healthy lives and food nourishments. Availability of food does not necessary means quality or nutritious food. Therefore this paper advocated for quality food and war against poverty. It also emphasized the availability of food during emergency of natural disasters to alleviate the suffering of the people or victims (Department of Welfare 1997). When a country has surplus food due to urban agriculture, such country will be able to assist other countries that are suffering as a result of disasters, political impasse, religion intolerance and ethnic wars (Centre for Development Support 2009).

Urban Agriculture and Food Security

Today the world faces the fundamental challenge of ensuring that millions of households living in poverty have access to enough food to maintain a healthy life. Agriculture remains a core sector for food security (Tracey 2011). Urban agriculture has been a successful strategy for improving food access to food insecure areas (Corrigan 2011; Larsen and Gilliland 2009). Despite the fact that studies have shown that urban agriculture cannot provide all the nutritional needs of communities, it can be an effective way to take direct action and can catalyse more comprehensive food-access strategies (SPUR 2012). South Africa can learn from the experience of developed countries like United States of America to bring about food security.

Some reports suggest that more important than producing food, urban agriculture is a strategy to increase health literacy (SPUR 2012). Urban agriculture has been a successful strategy for improving food access to food insecure areas like Duncan Village (Corrigan 2011). Despite

the fact that studies have shown that urban agriculture cannot provide all the nutritional needs of the communities, it can be an effective way to take direct action and can catalyse more comprehensive food access (SPUR 2012).

Urban agriculture food projects evaluated by the Community Food Security Coalition produced 18.7 million pounds of food with over 726,000 pounds donated for community food consumption in United States of America, whereas here in South Africa nearly a quarter of that being produced and sent to other countries (Stats SA 2015). Food security does not only mean abundance of food but the people who provided it must earn their living and have good livelihood. The provider of these foods must be comfortable so as to have adequate means of processing, preserving and transporting the foods to the needy. They must be able to afford the cost of production and distribution to the final consumers. If this cost increases continuously, it will definitely have affect in many areas. Therefore, efforts should be geared towards financial assistance to the producers of seasoned foods (Adu et al. 2014).

Student involvement in community or school garden program can help them to eat more of vegetables and fruit and less junk food as a result of their participation (Ober Allen et al. 2008). Eastern Cape Department of Agriculture have been engaged in a process of seeking to transform agriculture production system, livelihood patterns and human development (Moshiri and Saeedi 2010). Assistance in terms of garden establishment was provided in homes, clinics, schools, and communities. Also in addition to that there was provision of seed capital and starter packs for agricultural production such as farming implements (for example, wheel barrows, garden forks, spades, rakes, watering cans etc.) and production inputs (for example, seeds, seedlings, fertilizer, and insecticides). The program failed because of poor handling and information support system that was not available (Moshiri and Saeedi 2010).

RESEARCH METHODOLOGY

Research Design

A research design is a systematic plan to study a scientific problem. Therefore, the study adopted descriptive survey research to gather

information on grade 12 learner's perception of the effect of urban agriculture on food security and poverty eradication.

Population and Samples/Sampling Technique

The population consists of Grade 12 learners at Duncan Village in East London District. The sample consists of 78 randomly selected learners from Grade 12 to provide information on their perceptions of the effect of urban agriculture on poverty eradication and food security.

Research Instrument

The research instrument used in this research is structured questionnaire. The structured questionnaire used in this research involves modified Likert scale of responses which consists of three parts. Part A includes items to elicit information from respondent about bio-data. Part B consists of items on poverty eradication and Part C consists of items on food security.

Validity and Reliability of Instruments

The instrument was validated by the expert in this area and the supervisor while the researcher used test-retest to measure the reliability.

Data Analysis

The data was analysed using descriptive statistics of percentages and frequent counts to answer the research questions and to arrive at the logical conclusion.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

The demographic characteristics of the respondents are presented in Table 1. From the table, the gender group of the respondents shows that a little more than half (51.3%) were males, while 48.7 percent were females.

Table 1: Sex of respondents

Sex	<i>N</i>	<i>Percent</i>
Male	40	51.3
Female	38	48.7
Total	78	100

Age of the Respondents

The age of the respondents were grouped into eight categories (Table 2). Ages consisted of 16, 17, 18, 19, 20, 21, 22, and 23 years. The mean age of the respondents is 19.23. 32.1 percent of respondents (n=25) were between the age 16 and 18 years, 28.2 percent (n=22) were exactly 19 years of age, while majority of the respondents, 39.7 percent (n=31) were between the age 20-23 years of age.

Table 2: Age of respondents

Age	N	Percent
16	1	1.3
17	8	10.3
18	16	20.5
19	22	28.2
20	14	17.9
21	13	16.7
22	3	3.8
23	1	1.3
Total	78	100

Race of the Respondents

The majority of the respondents (n=74) were Black indicating that the grade 12 class is a black-dominated class (Table 3).

Table 3: Race of the respondents

Variable	N	Percent
Black	74	94.9
White	4	5.1
Total	78	100

Research Question 1: What is the Perception of Learners on the Effect of Urban Agriculture on Food Security?

Table 4 shows the items on food security and its relationship with urban agriculture. The result reveals that urban agriculture can promote food security is the best identified indicator that reveal the effect of urban agriculture on food security with highest mean of 3.39 and SD of .632. This is followed by 'urban agriculture provides food directly from the farm which is healthier than food that has travelled' indicator with second highest mean of 3.35 and SD of 0.855.

From the observed responses of the Grade 12 learners shown in Table 4, it can be established that food security which covers provision of access (physical and economic) to adequate amount of nutritious food, opportunity to make food choices, earning income to purchase necessary foods among others can be aided and achieved through the practice of urban agriculture this was in support of Dubbeling and Van Veenhuizen (2010) that succinctly described the efficacy of urban agriculture in providing food for the masses.

As affirmed by the response of the learners, individuals or households that practices urban agriculture either through vegetable production or small scale livestock production will be able to provide themselves with healthier and quality food always. In addition, the selling of produces from this urban agriculture can enable individuals or household to earn a living and buy food basket they could not produce on their own. Summarily as affirmed by the learners' response,

Table 4: Descriptive statistics of learners' perception on the effect of urban agriculture on food security

S. No.	Items	N	Mean	Standard deviation
1	Urban agriculture can promote food security	77	3.39	0.632
2	Urban agriculture allows people to have physical access to adequate amounts of nutritious foods	77	3.26	0.523
3	Urban agriculture allows people to have economic access to adequate amounts of foods	76	2.91	0.696
4	People make informed decisions over their food choices through urban agriculture	75	2.80	0.822
5	Urban agriculture can make people earn decent living wages	76	3.14	0.667
6	Urban agriculture can remove food insecurity among the people	76	3.16	0.731
7	Urban agriculture provides food directly from the farm which is healthier than food that has travelled	77	3.35	0.855

it is therefore being rightly established that urban agriculture has a positive effect on food security of individuals and households (Deppe 2012).

Research Question 2: How Does Urban Agriculture Eradicates Poverty?

From Table 5, the majority of the Grade 12 learners believed that urban agriculture has the potential of eradicating poverty.

Table 5 shows the indicators identified for understanding how urban agriculture can eradicate poverty. The result shows that the indicator 'urban agriculture can empower grade 12 learners to practice agriculture so as to eradicate poverty' is the most excellent performed indicator having a mean of 3.51 and SD of 0.620. This is followed by the indicator 'productive employment can eradicate poverty' with mean 3.22 and SD of 0.737. It is further seen that the effect of urban agriculture is more reflected on the social well-being of individuals than the emotional well-being. The mean of indicator urban agriculture has a large effect on the social well-being of individual (3.17) is higher than that of the indicator 'urban agriculture has a large effect on the emotional well-being of the individuals (mean 2.96).

According to Dubbeling and Van Veenhuizen (2010), urban agriculture solves the problem of hunger and erases malnutrition. It promotes food security and contributes to the economy of any country. Urban agriculture promotes bilateral trade agreement among nations. Hence, it contributes to the growth of national domestic product. Unemployment is reduced to bare minimum with the help of urban agriculture.

Poverty is combated since there will be daily income for the owners.

This is further revealed by their responses that urban agriculture can possibly empower Grade 12 learners in practicing agriculture thus providing them with productive employment which eventually has an outcome of eradicated poverty status. This corroborates the findings of Deppe (2012) that poverty which negatively affects the social and emotional well-being of people can be taking care of.

CONCLUSION

Based on the findings of this study, the following conclusions are made: all the variables (food security and poverty eradication) have an effect on the well-being of the people. It is further found/observed that the effect of urban agriculture is more reflected on the social well-being of individuals than the emotional well-being. This means urban agriculture has a large effect on the social well-being of individuals. It was further revealed that urban agriculture can possibly empower Grade 12 learners in practicing agriculture thus providing them with productive employment which eventually has a possibility of eradicating poverty in their communities.

RECOMMENDATIONS

The South Africa Government should encourage learners in schools to study this subject. The marks allocated for practical components of agriculture science should be increased so that learners will take the practical aspect of this subject very seriously. Engaging learners

Table 5: Descriptive statistics of learners' perception on the effect of urban agriculture on poverty eradication

<i>S.No.</i>	<i>Items</i>	<i>N</i>	<i>Mean</i>	<i>Standard deviation</i>
1	Urban agriculture can eradicate poverty in the village	77	3.18	0.721
2	Urban agriculture can empower grade 12 learners to practice agriculture so as to eradicate poverty	77	3.51	0.620
3	Productive employment through urban agriculture eradicate Poverty	77	3.22	0.737
4	Urban agriculture has a large effect on the social well-being of the individuals	76	3.17	0.719
5	Urban agriculture has a large effect on the emotional well-being of the individuals	74	2.96	0.784
6	Poverty eradication should be mutually supported	77	3.29	0.871
7	Environment protection can eradicate poverty in the village	77	3.26	0.677

daily in agricultural activities will enable them to be more active and independent when they leave school. They could have acquired entrepreneur skills and become self-employed. They will no longer become burden to their parents and society. This will reduce unemployment rate in the country.

REFERENCES

- Adu EO, Beni NO, Oshati T 2014. The impact of urban agriculture on student's life satisfaction in Eastern Cape, South Africa. *Mediterranean Journal of Social Sciences*, 23(5): 1293-1301.
- African National Congress (ANC) 1994. *Agricultural Policy, Reconstruction and Development Programme*. Cape Town: South African Press.
- Alkon A, Norgaard K 2009. Breaking the food chains: An investigation of food justice activism. *Sociological Inquiry*, 79(3): 289-305.
- American Society of Agronomy 2013. Urban Agriculture: The Potential and Challenges of Producing Food in Cities. Science Daily. From <www.sciencedaily.com/releases/2013/09/130917123607.htm> (Retrieved on 17 May 2016).
- Battersby-Lennard J, Finchman R, Frayne B, Haysom G 2009. Urban Food Security in South Africa: Case Study of Cape Town, Msunduzi and Johannesburg. *Working Paper Series for Development Bank of Southern Africa*, 15: 5-46.
- Bohn K, Vijoan A 2014. *Second Nature Urban Agriculture: Designing Productive Cities*. Oxon, UK: Routledge Publishers.
- Centre for Development Support (CDS) 2009. The Role of Urban Agriculture in Addressing Household Poverty and Food Security. *CDS Research Report, LED and SMME Development*, 2009(2). Bloemfontein: University of the Free State (UFS).
- Corrigan M 2011. Growing what you eat: Developing community gardens in Baltimore. *Mary & Applied Geography*, 31: 1232-1241.
- De Zeeuw HR, Van Veenhuizen M, Dubbeling K 2011. The role of urban agriculture in building resilient cities in developing countries. *Journal of Agricultural Science*, 149(S1): 153-163.
- Department of Agriculture (DoA) 2002. *Agricultural Policy in South Africa: A Discussion Document*. Pretoria: DoA.
- Department of Welfare (DoW) 1997. *White Paper for Social Welfare*. Pretoria: DoW.
- Deppe C 2012. *The Resilient Gardener: Food Production & Self-reliance in Uncertain Times*. Vermont, USA: Chelsea Green Publishing.
- Dubbeling M, Hoekstra F, Van Veenhuizen R 2010. From seed to table: Developing urban agriculture value-chains. *Urban Agriculture Magazine*, 24: 3-10.
- Hamm MW, Baron M 1999. *Developing an Integrated, Sustainable Urban Food System: The Case of New Jersey, United States*. USA: Routledge.
- Hardman M, Larkham P 2014. The rise of the 'food charter' a mechanism to increase urban agriculture. *Land & Use Policy*, 39: 400-402.
- Haward B 2014. Urban Farming is Growing a Green Future: Green Gotham. Environment. From <www.nationalgeographic.com>.
- Larsen K, Gilliland J 2009. A farmers market in a food desert evaluating impacts on the price and availability of healthy food. *Health & Place*, 15(4): 1158-1162.
- Moshiri M, Saeedi A 2010. *Rural Use Patterns and Methods of Preparation*. Tehran Iran: The Islamic Revolution Housing Foundation Publisher.
- Muehlhoff E, Boutrif E 2010. A new deal for school gardens. *FAO Urban Agriculture Magazine*, 18: 7-10.
- Ober Allen J, Alaïmo K, Elam D, Perry E 2008. Growing vegetables and values: Benefits of neighbourhood based community gardens for youth development and nutrition. *Journal of Hunger & Environmental Nutrition*, 3(4): 418-443.
- Pereira LM 2014. *The Future of South Africa's Food System: What is Research Telling Us?* South Africa: SA Food Lab.
- SPUR 2012. Public Harvest. SPUR Report, 1-36. From <http://www.spurcorporation.com/wp-content/uploads/2014/07/spurcorp_ar_2012.pdf> (Retrieved on 27 June 2016).
- Statistics South Africa 2015. Community Food Security. From <<http://www.statssa.gov.za/access>> (Retrieved on 27 June 2016).
- Tracey D 2011. *Urban Agriculture: Ideas and Designs for the New Food Revolution*. Gabriola Island, Canada: New Society Publishers.
- Vanderschueren F, Wegelin E, Wekwete K 1996. *Policy Programme Options for Urban Poverty Reduction: A Framework for Action at the Municipal Level*. Washington, D.C: The World Bank.
- Waterford D 2015. *21st Century Homestead: Urban Agriculture*. Morrisville, United States: Lulu.com. ISBN 978-1-312-93651-5.
- White Paper on Agriculture 2015. From <<https://www.google.co.za/#q=white+paper+on+agriculture+2015>> (Retrieved on 27 June 2016).

Paper received for publication on June 2016
Paper accepted for publication on December 2016