

Minireview Paper

The Social, Economic and Health Impacts of Urban Agriculture in Zambia

ABSTRACT

Urban agriculture practices are on the rise amongst the Southern African populace. The practice of urban agriculture brings with it positive and negative impacts among the Southern African population. Nevertheless, the impacts of urban agriculture over Southern Africa cannot be equated to an individual country due to varying characteristics of each nation such as: national policies, geographic location, context of urban agriculture and the socio-economic and political conditions of the area. As a result, this the paper, focusses on one nation only, in particular, Zambia. The paper investigates the benefits of urban agriculture in Zambia, with a specific focus on the social, health and economic impacts on the Zambian urban populace.

Keywords: Urban agriculture, urban farming, food security, Impacts, Zambia

1. INTRODUCTION

Mougeot (1) defines urban agriculture as “an industry located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, which grows and raises, processes and distributes a diversity of food and non-food products, (re-) using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area.” From the mentioned definition of urban agriculture, it can be said to contribute to various socio-economic and health benefits to the population in the cities. Moreover, contributing to food access, nutrition and food security (2,3,4).

A study by Crush, Hovorka & Tevera (5) on the place of urban agriculture in cities of Southern Africa reported on the benefits of practising urban agriculture among the cities of the southern populace. Accordingly, Crush, Hovorka & Tevera (5) provide a general overview of the scope and impacts of urban agriculture for all cities within southern Africa. Conversely, some authors argue that the extent and or impacts of urban agriculture of a region, for example, southern Africa, cannot be equated to an individual country due to the varying characteristics of each country (6). The varied characteristics include: the context of urban agriculture, geographic location, individual country land policies, socio-economic and political conditions of the area (6, 7). In this regard, this paper focusses on one country only, in particular, Zambia, with the main aim of providing a review on the documented impacts of urban agriculture with the nation.

Zambia considers the agricultural sector to be of the highest importance for economic growth, food security and poverty alleviation (8,9). Over, the past years, the practice of urban agricultural has increased in the country, especially among the poor urban populations (10). The practice mostly involves the production of crops, livestock and tree crops on plots or open public and private land rented within the city and peri-urban areas (3,5). Most of the crops cultivated include maize and vegetables (11).

In all, the increase in urban agriculture in Zambia prompted to investigate the impacts of urban agriculture within the Zambia context, specifically on the social, health and economic impacts of urban agriculture.

2. DISCUSSION

The impacts of urban agriculture in Zambia

The section discusses the economic, health and social impacts of urban agriculture in Zambia found in the literature. For the purpose of this review, sub-categories are utilised to aid structure the discussion of each of the main impacts of urban agriculture in Zambia.

3.1 Social Impacts

According to Golden (12), she defines a social impact as the “*effect and or influence of activity on the social fabrics of the community and the welfare of the families or individuals*”. Additionally, Golden (12) further states that social impacts in urban agriculture that are of significance should “*incorporate the impacts that urban agriculture has on human relationships and interaction with each other and the built environment*”. Thus, for the purpose of this review, the definition and approach of social impacts illustrated below are guided by Golden (12).

3.1.1 Access to land

The first social benefit of urban agriculture is that it provides an avenue for individuals to access land within the cities which is usually not available for agricultural purposes. In most instances the private enterprises own the land in the city, thus making it impossible for the urban people, mostly the poor, to access land for cultivation (10,13). Fortunately, Simatele & Binns (10) through their study in Lusaka city, consisting of Chilenje Township, Seven miles and Garden compound as study sites, highlighted two methods in which land was accessible for urban agriculture within the city.

Firstly, Simatele & Binns (10) cited that the interested individuals/ households were able to access land through renting of land from another individual (whether a farmer or not) who is leasing out land for agricultural purposes. Secondly, crop sharing is the other method of accessing land (10). Crop sharing practice occurs when a person who has access to land and finances makes these available to an individual farmer in the city that wants to farm (10, 14). In return, the farmer that received the finances and accessed the land pays back the land owner in monetary terms and a proportion of the crop produce after harvest (10,14).

However, between the two methods of land access, the authors suggest that crop sharing was the least practised between the two methods of accessing land in the city (10). Despite the possibilities of having access to land, Hampweya (10) argues that most people that practice urban agriculture are the urban poor who do not have access to credit. Thus, will not have money to pay to rent land for agriculture purposes. Thus, it can be deduced that the extent of this social impact is minimal in Zambia.

3.1.2 Recreational benefits

The second benefit is that urban gardens create spaces for recreation to households/individuals. In particular, a study by Hampweya & Rogerson (15) in Ndola, Copperbelt Province reported that 12% of the urban households practised urban agriculture as a hobby, thus providing them with an activity for relaxation and leisure. Similarly, Smart (16) emphasises that urban agriculture is a good source of unwinding and relaxation for the middle and upper-income earners. In addition, Smart (16) states that some people take up urban agriculture as a lifestyle choice because it symbolises the level of maturity of an individual. Specifically, it is seen as the stage of settling down (married stage) in a person’s life. Lastly, Smart (16) further shows that some people who practice gardening as a hobby do so because of past experiences in farming, thus continue to grow their produce from their home gardens.

3.1.3 Reduces safety and beauty of the city

Although the positive social impacts of urban agriculture exist in literature, the last reported social impact is negative. Accordingly, Smart (16) reports that urban gardens reduce the level of safety in the urban areas of Ndola, Kitwe and Luanshya, Copperbelt province, due to the increases in the number of thefts of crops and livestock where agriculture takes place. Additionally, other researchers (17) are of the notion that urban agriculture is viewed as a public nuisance to the environment and the neighbours. There is plausibility in this argument in that the presence of livestock could cause air and noise pollution to other people in the community due to living in close proximity to both the animals and human beings (17). Furthermore, conflicts may arise between neighbours when the livestock of an individual eats the vegetables of another farmer in their field.

Finally, Smart (16) discovered that some people perceive that gardens in the city reduce the beauty of the city. Specifically, Smart (16) shows compelling evidence that the urban population link the practice of agriculture in the city to rural areas. In other words, people view urban agriculture to make the city look like a village (rural area), thus removing the beauty of it when agriculture practices continue in the area.

95 **3.2 Economic impacts**

96 Some studies in the urban cities of Zambia report on the significance of the economic benefits to the people practicing
 97 urban agriculture (18,19,20,21). The researchers state that monetary benefits play an important role in income generation
 98 and savings to the low-income urban populations, rather than the high-income earners. The following are the economic
 99 benefits of urban agriculture listed from literature:

100
 101 **3.2.1 Economic savings on food**

102 Firstly, various researchers indicated that urban agriculture saves participants' money on their food expenses (10,21,22).
 103 The food produced from the gardens/fields is consumed within their homes, thereby reducing the budgeted amount of
 104 money required to buy household food. Moreover, the authors (10,21,21) show that the household harvest and eat some
 105 vegetables from their fields rather than going to buy them from the markets. As a result, the monetary savings on food
 106 purchases is diverted to other household services such as health and education.

107 For instance, the evidence from literature from studies carried in Garden compound (urban informal township), Chilenje
 108 (urban formal and organised township) and Seven miles (peri-urban) of Lusaka province, quantified the costs of food
 109 savings of the participants as per location (10,21). In relation to the Garden compound, the authors (10,21) indicated that
 110 the individual gardeners made a saving of US\$15-35 per month on food expenditure because 75% of vegetables eaten in
 111 the household was from their gardens. Secondly, the farmers in Chilenje compound saved at least US\$ 100 per month
 112 due to that fact that sixty-five (65) percent of leafy vegetables consumed in the homes was from the gardens. Lastly, the
 113 participants from Seven miles consumed at least 96% of their agricultural produce which included both livestock and
 114 vegetable produce. Consequently, the authors reported that the farmers saved money amounting to US\$ 5000 which was
 115 equivalent to two months' salary of a civil servant at the time of conduction of the study (22).

116
 117 **3.2.2 Source of Income**

118 The second economic benefit is that urban agriculture provides a source of income through the sale of crops
 119 (10,17,23,24). Simatele & Binns (10) argue that the income generation benefit of urban farming is most significant among
 120 the urban poor because most of the urban poor have less disposable income and other assets. Furthermore, the authors
 121 argue that the poor lack formal employment or any small business that can supplement to household income for other
 122 services required by the household (10). Thus, leading to the conclusion that the income generated plays a vital role for
 123 the poor to purchase other required household services. Other sources of income reported in the literature included the
 124 leasing of land and crop sharing to people that want to cultivate in urban areas (10,13).

125 Conversely, other researchers show that urban agriculture may lead to losses in household income and increases in
 126 household food expenditure (21). However, their theory only holds true in cases of extreme weather such as droughts and
 127 floods. In particular, Simatele, Binns & Simatale (21) studied the impacts of excessive drought on urban agriculture
 128 between the years 2000-2005 in 3 study sites of Lusaka city. On the first study site, the authors (21) reported that farmers
 129 in Garden compound experienced low yields due to drought, which led to the household income loss of at least 40%.
 130 Also, food shortages were reported to have increased by 65% in the area.

131 Additionally, the authors demonstrated that the farmers on the second study site, Chilenje Township, lost at least 35% of
 132 their income from the droughts that resulted in poor crop harvest (21). Additionally, household food expenditures
 133 increased by 45% in Chilenje. Finally, the authors reported that the farmers in Seven Miles lost 90% of income generated
 134 from agriculture and their level of food insecurity increased by 30%(21). In all, extreme weather change adversely impacts
 135 agricultural yields, leading no less crop for sale and household consumption.

136
 137 **3.2.3 Job Creation or Source of Employment**

138 Lastly, urban agriculture provides a source of employment to some of the urban populations in Lusaka and Copperbelt
 139 provinces (6,10,20). For example, Smart (16) identified that land owners of the fields/gardens require additional labour to
 140 take care of the gardens. Therefore, the landowners employ either seasonal or full-time employees depending on labour
 141 needs. Seasonal employment is usually available during land preparation and harvesting periods. Most, low-income areas
 142 employ seasonal workers, while high-income earners will employ a full-time worker to assist with the garden or farm.
 143 Furthermore, Smart (16) quantified that urban agriculture employed approximately 23% and 45% of full-time and seasonal
 144 workers in the Copperbelt province, respectively.

145
 146 **3.3. Health impacts**

147 The following are the positive and negative health impacts of practising urban agriculture in Zambia as documented in the
 148 literature:

149
 150

151 **3.3.1 Food access and security**

152 Firstly, urban agriculture has proven to be an effective adaptation or coping strategy practised for improving access to
153 food to urban areas that are food insecure (10). Most especially among the urban poor who lack formal employment or
154 any other alternative sources of income generation to purchase food (10,16,13). In other words, urban agriculture
155 contributes to the food basket of the household through the provision of traditional and exotic vegetables required at home
156 (21). Additionally, some of the sold agricultural produce provides a source of fresh vegetables on the market to people in
157 urban areas that are unable to grow their vegetables.

158 With regards to food security, the study by Smart, Nel & Binns (6) demonstrates that approximately 63% of the
159 respondents in the Copperbelt province perceived themselves to be food secure due to practising urban agriculture.
160 Furthermore, Hampweya & Rogerson (15) through their case study in Ndola showed that households perceived
161 themselves to be food secure for varied time periods because of practicing urban agriculture. In particular, thirty (30)
162 percent of the participants cited themselves as food secure for 10-12 months, thirty-two percent stated to have no food
163 insecurity for 6-9 months and finally, twelve (12) percent had food security of less than three months. In all, urban gardens
164 provide access to food to populations that practice urban agriculture and to nearby markets for sale. Also, farmers that
165 practice urban agriculture perceive themselves to be more food secure.

166 **3.3.2 Food and Nutrition literacy-capacity building**

167 Another important positive impact recorded in literature apart from the production of food is that urban agriculture is used
168 as a development strategy to reduce poverty through food and nutrition literacy in urban areas (16,25). In particular, the
169 government ministries (Ministry of Agriculture and Ministry of Health) and Non-Government Organisations (NGOs)
170 promote urban agriculture as a development strategy through targeting malnutrition and food security. Especially to the
171 most vulnerable urban poor populations, of people living with HIV/AIDS (PLWHIV) and vulnerable children (25). Moreover,
172 Smart (16) in her study of urban agriculture and economic change in Ndola, Kitwe and Luanshya, Copperbelt province,
173 discovered that some NGOs had a programme of vegetable gardening which had been running for over two years. The
174 produce from the gardens was used to build the capacity of the communities by teaching the population on food
175 preparation techniques through home economics classes, that is, food, health and nutrition classes.

176 In addition, Smart (16) reported that the home economics classes also teach other lessons apart from food preparation,
177 such as, the importance of crop diversification to the urban vulnerable population. In particular, maize is the staple food,
178 and in most instances usually, the only crop grown among the urban populations. Thus, through the classes, the author
179 showed that the NGOs encouraged the communities to grow crops which have nutritional and medicinal benefits to one's
180 wellbeing, rather just growing maize (16). For example, Moringa trees and amaranthus vegetables are promoted because
181 consuming the leaves from those sources can boost the immune system of PLWHIV and control malaria, respectively
182 (25).

183 **3.3.3 Threats to human health**

184 Even though urban agriculture reports some positive impacts, some negative impacts of the practice exist in the literature.
185 Various researchers reported that urban agriculture threatens human health due to diseases, namely cholera, dysentery
186 and typhoid that have been linked to the consumption of vegetables irrigated with water from untreated sewer ponds
187 (26,27,28). The farmer's use of untreated wastewater is due to two reasons. Firstly, the land near sewer ponds is free and
188 easy to access because the land is not privately owned. Secondly, the lack of access to the water required for crop growth
189 off the rain season. For instance, Simatele & Binns (10) showed that at least 29% of the respondents in the Garden
190 Compound, Lusaka city resorted to water their gardens with untreated wastewater from sewer ponds. Most especially
191 during the non-rainy season because there is no available source of safe water to utilise due to the lack of infrastructure.
192 Therefore, sewer ponds provide readily available water to the people practicing urban agriculture. Consequently, the
193 authors reported that various human health cases of dysentery and cholera in Garden compound were linked to the
194 consumption of vegetables which are grown in fields where the application of sewage and human waste occurred.

195 Similarly, Smart (6) illustrated that approximately 96 % of the urban respondents in the Copperbelt province mentioning
196 that they cultivate their food due to the rising concerns of unhygienic and inorganic produce available on the market.
197 Moreover, Smart (6) further stated that the cities of Ndola and Kitwe in the Copperbelt reports food safety challenges due
198 to the rise in the number of human cases of typhoid and other health diseases at the hospitals that have also been linked
199 to the consumption of vegetables irrigated with water from sewage ponds.

200 Apart from the adverse health impacts that arise from the use of water from sewer ponds, the use of irrigated water
201 contaminated with heavy metals in highly industrialised urban sites has negative effects on human health to people that
202 eat the vegetables (20). Kapungwe (27) agrees with this view through a study in which he investigated the levels of heavy
203 metal contamination of soils, water and crops in Mufulira and Kafue districts of the Copperbelt and Lusaka provinces
204 respectively. Specifically, Kapungwe (27) tested the presence of heavy metals, namely cobalt, lead, nickel, copper and
205 cobalt, in soil, water and plants using the atomic absorption spectrometer method.

206 In his results, he showed that the level of the heavy metals in the water, soil, and plants near the industrialised areas was
207 above the critical threshold which led him to conclude that the use wastewater contaminates the soil, water and plants in
208 the areas. In addition, the growing of vegetable in soils irrigated by water from heavily industrialised areas causes serious

health impacts to the urban population. Furthermore, Sanyal (20) states that the improper use of pesticides on crops consumed in urban gardens would lead to more cancer cases in humans in the long term. Lastly, with regards to livestock and human interaction, Thornton, Nel & Hampweya (17) highlighted that human beings are at risk of developing of zoonotic diseases. The zoonotic ailments are transmitted from animals and birds to people that live in close habitation to each other

3. CONCLUSION

The literature review in the discussion showed that urban agriculture has various positive and negative social, economic and impacts to urban populations in Zambia. The positive impacts of the practice included: income generation, source of employment, increased food access, food capacity building on food, health and nutrition classes, the source of recreation (hobby), economic savings on food and improved access to land. While, the negative impacts included: the reduction of safety in urban areas and beauty of the city and reported cases of threats to human health due to cases of cholera, dysentery and typhoid that is linked to the consumption to vegetables that have been irrigated with untreated wastewater from the sewerage ponds. Another threat to human health mentioned would arise from eating vegetables that have been grown and irrigated with water from highly industrialised peri-urban areas. The water and soils in industrialised areas were reported to be contaminated with heavy metals which lead to negative health effects on the populations.

In all, urban agriculture provides some social, economic and health benefits to the population in Zambian cities. Despite the view from the R_SNDP (2014:8, 29,) that agriculture contributes to poverty alleviation, food security and employment opportunities (13,29,30), the practice is mostly considered as an activity to supplement to food security, thus would not adequately contribute the social, economic and health benefits of the populace. In addition, the urban populations do not view urban gardens/fields as the priority to solve the problems of poverty alleviation, food security and unemployment (10). In other words, the urban populace perceive urban agriculture plays a critical role as an adaptation or coping strategy to the urban poor (24), implying that as soon as other alternative sources of income are available, the practice can be dropped.

COMPETING INTERESTS

Authors have declared that no competing interests exist

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