

The potential and challenges of urban agriculture in promoting food security and economic development in South Africa

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Abstract: Although the South African government invested in addressing the rise of urbanisation, this has not been achieved and it has been a threat to urban food security. Urban agriculture is important for ensuring urban food security and it plays a vital role in enhancing South African township economies. The fundamental of urban agriculture has been noticed in solving people's livelihoods, food security, economic development, and job creation, more especially, in townships. Furthermore, urban agriculture plays a crucial role in terms of absorbing a lot of the labour force and offering raw materials for industrial growth and development. The South African government have recognised urban agriculture as one of the instruments that could be used to revitalise townships economies. The study used secondary data to understand the potential of urban agriculture in development and its limitations that affect its operation in development. The study shows that there are challenges that hold the agricultural sector back, the issue of politics of land, pest and diseases, lack of financial support, poor infrastructure, and lack of access to the market. There is a limited space for urban farmers to practice agriculture and that there is competition of space among different sector of development in cities, this study proposes that there should be bylaws or framework promote that sectors in cities should have equal space to practice their development.

Keywords: Urban Agriculture, Food security, economic development, South Africa.

Introduction

The agricultural sector is recognized as one of the primary sources of employment, livelihood, income, and food security for most families around the world. Likewise, some scholars [28]; [53] concur that agriculture plays a fundamental role in people's livelihoods through food provisioning and economic development. In Ghana, the agricultural industry contributes approximately 20% of the country's Gross Domestic Product (GDP) annually [28]. Learning from the year 2018, Ghana's GDP's growth rate was 6.3%, in the year 2019, the agricultural growth rate was 8.4% [28]. The agricultural sector not only boosts the economy but also provides jobs and supplies raw materials for industrial progress. The work of [18], shows that the South African government introduced different strategies for the revitalization of township economies to ensure an inclusive and sustainable economy. The government's vision is that of vibrant and viable township enterprises, which includes the mobilisation of townships purchasing power, to improve income and invest in productive activities to build strong townships' economies. The term "township economy" typically encompasses all economic activities taking place within officially designated urban areas known as townships. This includes the processes of production, distribution, exchange, and consumption of goods and services [39]. Urban agriculture is one of the pillars that could promote revitalisation of township economies as could be practise as commercial activity. In South Africa, the practice of urban agriculture is described as one of the vital instruments that contribute significantly to townships' economies and households' food security [30]:[51]. In as much as this sector has the potential to contribute to the attainment of the National Development Goal (NDP) of 2030 as well as the Sustainable Development Goal (SDGs) of 2030, that there some limitations to the operation of this sector. For example, climate change, lack of infrastructure, barriers to access market, politics of land, and other externalities.

Such challenges harm the development of urban agriculture towards playing a critical role in the attainment of township economy and food security. [20] view that drought, floods, and other challenges threaten the contribution of generally the agricultural sector towards GDP. Considering the contribution that the agricultural sector has in the GDP of the country, and the crucial role play(ed) in the township economy, the present study focuses on the potential that urban agriculture has in growing the township economy and the challenges that affect these developments.

Urban agriculture in south African contexts

In South Africa, the urban agricultural sector is one of the biggest role players in food security and economic growth, most especially, during times of shocks or economic hardships [16]. The practise of urban agriculture in South Africa could be defined in various forms, namely, social, economically, and environmental perspectives. [38] urban agriculture is a way to guarantee access to food, promote wellness through a balanced diet, and enhance overall well-being. [41] and [54] suggest that urban agriculture can be a valuable way for disadvantaged individuals to generate income. While [19], urban agriculture is considered a crucial strategy in preserving the aesthetics and natural environment of cities. It could be noted that in South Africa urban agriculture is practised for both subsistence and commercial purposes., Subsistence farming recorded to be the most dominant practice. Therefore, urban agriculture must be transformed to be more commercial to play a critical role in terms of economic contribution.

Several studies [55];[15];[47] Studies have shown that urban farming can greatly reduce food insecurity in cities by increasing food production and creating new job opportunities. Urban farming is often suggested as a way to survive, especially for low-income individuals who view food security as their top priority [51]. It may help to alleviate poverty by generating income for farmers and job opportunities associated with small-scale food production and contribute towards South African townships' economies [53]. In South Africa, various urban municipalities, most notably the City of Cape Town and eThekweni Metropolitan Municipality, have begun to promote urban agriculture through including urban agriculture in their programmes and planning. These programmes include local economic development (LED), municipal economic transformation road map, land used scheme, and agricultural plan. Johannesburg has also completed its urban agriculture strategy, which is being implemented as part of a food security program. [47] suggest that urban farming is crucial for providing food and increasing income. For instance, city residents can sell their produce to street vendors, neighbours, or anyone looking to purchase their goods. This marketing strategy is described as an informal marketing strategy, however, urban dwellers benefit from this strategy, as they receive income which later is spent on the local supermarkets and that creates local economic growth [7]; [34]. More developments are needed to promote urban agriculture such practice needs to be promoted by the government, Non-Government Organisations (NGOs), private businesses, and communities who benefit from this practice. The development and promotion of urban agriculture have the potential to reduce hunger, food insecurity, and it can improve the local economies, however, there must be a strategy on how to develop or scale up the practice through dealing with challenges that hinder it functioning.

The role of urban agriculture on food security

In the twenty-first century, different cities all over the world face a rapid rising in the urban population. By 2050, the urban population is expected to rise by 68% [32]; [13]. Different cities experience a different rising rate of urbanisation [32]. Although, states have tried to address the rising of urbanisation in most cities, it was not achieved, and this has been a tread to urban food insecurity. For that reason, some scholars have proposed the implementation of urban agriculture to address the challenges of food availability and accessibility in urban areas [49]. One of the essential functions of urban agriculture is to solve the growing challenge of urban food insecurity. It plays a significant role in developing countries such as India, Vietnam, Cuba, Ghana, Uganda, and Kenya through the provision of fresh and nutritious food [10]; [21]. Urban agriculture provides a significant portion of the food supply in cities. In Ghana's capital, for instance, around 90% of the fresh vegetables consumed are produced within the city limits [22]; [35]. A study conducted in Hanoi, Vietnam revealed that urban farming in the city and its neighboring areas supplies 80% of the fresh vegetables and 40% of the eggs that are eaten in the region [27]. The high level of production can be credited to a significant portion of the population participating. In certain Asian cities (for instance Jakarta in Indonesia, Kabul in Afghanistan), roughly 80% of the population is engaging in urban agriculture; while in African nations, over 40% of the urban population is participating [55]; [17].

In South Africa, urban agriculture plays a crucial role in development but because the sector is regarded as an informal sector its contribution has been seen to be low. Likewise, the work of [10] shows that South Africa is one of the lowers contributors with less than 5% of food production in Africa and this is because the development of urban agriculture is regarded as informal. The potential of agriculture in development is seen to be advantageous to the poor and working-class since it provides a consistent source of nutrient-rich food. Moreover, urban agriculture has the potential

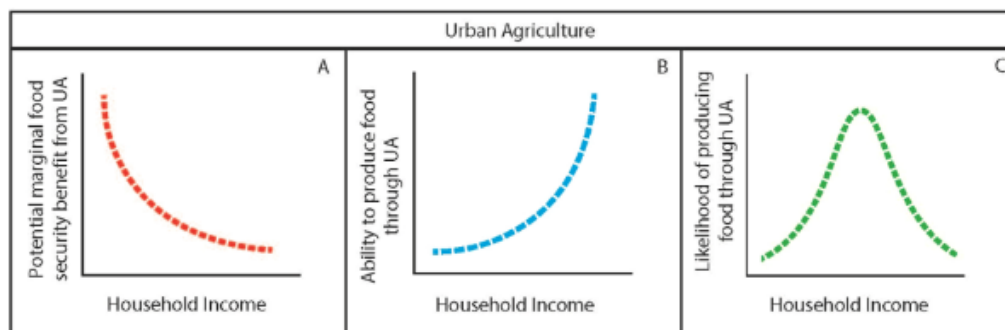
to enhance the nutritional status of people who cannot afford access to nutrient-dense foods. [3]; [43] state that urban residents spend 50–70% of their income on food and this is double more than what rural residents spend. As a result, the city dwellers are the most vulnerable to rises in food costs; when income is scarce, individuals tend to shift their consumption toward high-calorie items with low nutritious value. Urban agriculture has the potential to alleviate this situation by providing the urban poor with a reliable source of healthy food [10]; [27]. Urban agriculture has been recognized for its positive impact on the health of disadvantaged city residents in countries like Zimbabwe, Kenya, Uganda, and Haiti. In all these regions, impoverished households that practiced urban farming were compared to those that did not practice urban agriculture. It was shown that households engaged in urban agriculture had higher food security, ate more meals, maintained a healthy diet throughout the year, and utilized income to purchase food products that would otherwise be unaffordable [3]; [24].

Except for access to food security, urban agriculture plays a role by ensuring economic growth in cities. Their contribution is also important since it creates jobs, strengthens local economic links, including attracting new capital and chances for company growth; and increases housing values [27]; [4]. The significance of urban agriculture activities may best be understood by analysing the proportions of revenue generated by agricultural activities in urban areas throughout quintiles of the consumer expenditure. [22], Toronto buildings (Canada) generate jobs for around 1,350 people, both directly and indirectly and all these people receive income which they use in the local market to buy their needs. The cultivation and commercialization of para grass in Hyderabad, India generates an approximated annual income of USD 4.5 million to the city's economy [5]; [44]. Furthermore, the potential of urban agriculture is also seen through the Gross Domestic Product (GDP), the contribution of urban agriculture towards the city's GDP may not be large when compared with non-agricultural land uses and this is caused by the challenges impacting this sector compared to other sectors. These challenges include and not limited to the inadequate land availability to expand production and lack of land ownership, marketing challenges faced by farmers, assets and conflicts on resources, and planning policy constraints [40]. The following section focuses on understanding the role of urban agriculture in South Africa.

The role of urban agriculture on economic growth

As a point of departure, before engaging in urban agriculture, it is important to first start with agriculture in general with the reason that the concept of urban agriculture cannot be separated from agriculture. Agriculture is an umbrella which comprises of urban agriculture. For over 10 years, the agricultural sector contributed an average of 2.5% toward South African GDP, until 2019 where it contributed 1.88%, (when converted this is 2%) [50]. The results affirm that the agricultural sector plays a critical role in uplifting the country's economy. The contribution of agriculture was also observed during the rising of the Corona virus (COVID 19) cases in South Africa. This was noted in 2020, where it contributed significantly to the country's GDP development with a gain of 28.6 per cent in the first quarter (Q1) and became the worst performer (15.1 %) in Q2 of 2020 and increased at a rate of 18,5% in the last quarter of 2020 despite difficult disease of the COVID-19 pandemic [26]. For the reason that the study focuses on urban agriculture, it is important to understand how urban agriculture plays its role in development.

The figure (figure 1) presented below indicates the potential of urban agriculture in ensuring that poor people do benefit from urban agriculture. In A, the figure shows the potential marginal food security benefit of urban agriculture by household income. While B, indicates the capability of urban agriculture to produce food to feed families. Lastly, the study present C, which shows the likelihood of producing food from urban agriculture by household income.



Source: [10]

Figure 1: Potential of urban agriculture and household income

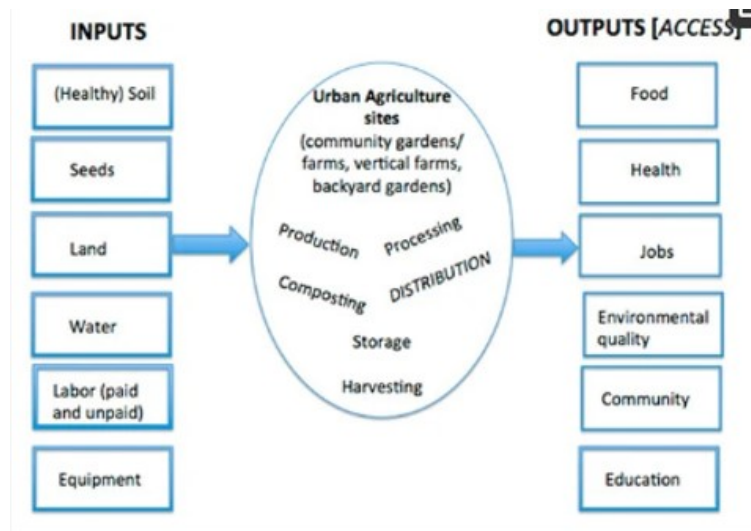


Figure 2. Multiple Inputs and Outputs of Urban Agriculture.
Source: [45]

Based on the two-figure presented above, urban agriculture is important for generation of income. Moreover, urban agriculture plays a fundamental role producing food for the local communities. Except that the practices of urban agriculture have been praised by some scholarship, however, there are limitation.

Challenges of urban agriculture

As indicated above, irrespective that urban agriculture plays a critical role in the provision of food security, GDP and creation of opportunities for urban residents, this sector is equally experiencing limitations that disturb its operation. Scholars such as [11] believes that there are numerous challenges facing urban agriculture in South Africa. Therefore, this section discusses the challenges that distract the practice of urban agriculture. It unpacks these challenges and how they influence the potential of urban agriculture in development. One of the limitations of urban agriculture is the land. As a point of departure, in urban areas, the land is important for many different things, for instance, residential, commercial, the building of industries, streets, and parks as well as providing public investment as revealed above. Based on this, the land is the foundation of any development [25]. On the same view, the study by [32] reveals that access to the land is a major key in enhancing the economy. Borrowing from the study of [29] focused on how to make the urban land market help to enhance the economy of the country. The study [29] proposed that it is important to rethink the understanding of economic growth. The shortage of land in urban areas is seen by the huge population growth. The limitation of land access relates to the conflict of land usage for development and agricultural purpose. Urbanisation which is caused by migration and population growth in cities lead to the decline of urban land which can be utilised for farming [33]. Learning from the work of [36]; [23] indicate how the rural-urban migration and population growth has stimulated urbanisation and conflict in urban areas in Tarai district (Nepa). [5] show that the expansion and development of the city's infrastructure take place in the urban farms, hence, it affects and limit the space where urban agriculture can be practised.

The increasing number of people who migrate from rural areas to urban areas shows that they will be popular in cities, hence, open space will be used [54]; [31]. Additionally, [29] found that urban farmers in Lagos State, Nigeria choose to work on less desirable lands in order to avoid competition and conflicts over land use, which ultimately has a negative impact on their productivity. The unavailability of space in urban areas makes the urban farmers to practice farming by the roadside and on the rooftop. [45] believe that the practice of urban agriculture close to the road put the urban farmer in danger which may affect their agricultural investment. The challenges of land for practising urban agriculture are also detected by [46]; [14], the scholars noted that there is politics of land which is one of the critical challenges facing the agricultural sector because the land is in contestation between different sectors, therefore, it becomes difficult for urban agriculture to have the space for farming. In most cases, land in urban areas is only reserved for urban industrial and housing purposes, hence, it leaves no or small portion for urban dwellers to practice farming. The agricultural sector ends up practising in the swamps, backyards, and along the road where they occupy small plots

and are not fertile. Politics of land make it difficult for urban agriculturalists to compete in a market in terms of providing quality and consistent supply to the market [9].

Except for the land access challenges, the sector is likewise facing climate change complications. Scholarship [2] reveal that climate change is another issue that hinders the quality production of urban agriculture [3]. The prospect of fluctuating rainfall seasons, which result in altering rainfall dates, hurts planting dates and crop management [2]. The impact of climate change on agriculture is clear it affects food supplies and reduces productivity [1]. Moving forward, urban agriculture is being affected by the labour shortage. According to [52]; [8], the shortage of labour in the sector has implications on urban agriculture's productivity. Youths are most preferred in the agricultural sector; however, young people do not yet recognize agriculture as an opportunity, and this is concerning [6]; [52]; [12]. In Nigeria, a study was conducted, and it discovered that the high cost of labour is a big challenge of urban agriculture [39]. In 2012, the work of [56] indicate that the high cost of labour affects the profit which is generated by the sector (urban agriculture) except that is also harm the household income as well as food security. Urban agriculture is also facing the challenge of "high food prices and the lack of income" and thus limits the proper operation of the sector [57]; [48].

Another challenge is that of pest and vegetable diseases. Pest and vegetable diseases are one of the challenges that negatively impact farming activities. Pests and diseases badly contributed to crop failure. [42]; [37] show that pests and diseases destroyed the quality of products. Moreover, the roaming of domestic animals was another challenge affecting the smooth contribution of urban agriculture towards the country's GDP (source). Most farms are not fenced therefore cow and goats destroy their products in the gardens, and this had a bad impact on the practice of urban agriculture. Furthermore, lack of market accessibility is another challenge. Most of the emerging urban farmers do not have places to sell or market their products; rather, they sell in roadsides, and neighbours [51]; [12].

Conclusion and recommendations

Just like other agricultural sectors, urban agriculture plays an important in feeding the urban population. This sector is motivated by the growing urbanisation in South Africa. The uncontrollability of urbanisation has been a tread to urban food. Hence, it is for that reason, that the government officials, scholars, etc. focus on ways that can address food shortages in urban areas. Urban agriculture has been so relevant in the provision of food inside the town. Its contribution goes beyond the provision of food but healthy food to ensure food security. Urban agriculture is also creating job opportunities for urban residences and surroundings. As is shown above, this sector plays a critical role in the GDP of the country. Judging from its contribution towards, food security, employment creation and GDP of the country, it shows that this sector has a potential role in development. Except that this sector has a crucial role in development, it is likewise having challenges that affect its role in development. Land access is one of the limitations that affect the practices of urban agriculture. In urban areas, different sectors (residential, commercial, the building of industries, streets, and parks as well as providing public investment) are competing for business space. Hence, live small space for farming. The present study confirms the study conducted by [33] which shows that the migration and population growth in cities lead to the decline of urban space that can be utilised for farming. The present study believes that the potential of urban agriculture is being affected by the limited space for practising agriculture. Except for not having space for farming, urban agriculture faces the issue of politics of land, lack of access to the market, climate change, pest, and vegetable diseases, and roaming around of domestic animals. Addressing such challenges may be important for the proper operation of the urban agricultural sector since this sector has the potential role in development.

Considering that there is limited space for urban farmers to practice agriculture and that there is the competition of space among the different sectors of development in cities, this study proposes that there should be bylaws or frameworks that promote that sectors in cities should have equal space to practice their development. For instance, if 50 per cent of urban space is allocated for industrial development; the farming sector should access similar space. This will make the agricultural sector have enough space for producing food. In the provision of urban farming, local government should work head in the head with local farmers to support their productivity through the provision of training, financial support. Moreover, in the issue of the market, the study recommends that municipalities must negotiate with wholesalers to trust local producers and buy from them, however, the form of contract agreement should be designed. This could help local farmers to produce with pride knowing that they have an agreement with the market. Lastly, local municipalities should assist with fencing, and provision of pest control.

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