



The significance of home garden as an agroforestry practice: A case study in the Ashanti Region of Ghana

By Lewis Kadzahlo and Sawyer Samuel Prempeh, adapted by ROOTS.

Home gardens are an important consideration in terms of household socio-economics and have become one major contributor to urban greenery, yet their significance is often unrecognized. This is particularly relevant in wet-sub equatorial regions such as Ghana, as home gardens have been a way of life for communities in the Ashanti Region of Ghana.

This article is an adaptation by ROOTS of the case study carried out by Lewis Kadzahlo and Sawyer Samuel Prempeh, who evaluated the composition and purpose of establishing home gardens, assessed its social and economic benefits of the livelihood of urban households and assessed its contribution to urban greenery. The study sought information from 60 home gardeners selected through purposive sampling from the four suburbs of Bantama Sub Metro within the Kumasi Metropolitan Assembly.

Background

Ghana has undergone fast urbanization and population growth in recent years as a result of increased rural-to-urban migration and rising per capita income [1]. The Bantama Sub Metro in the Kumasi metropolis is one of the developing districts in the Ashanti region and it is threatened by insufficient food supply, especially vegetables and fruits, plant species degradation and environmental pollution [2].

Home gardening has been regarded as one of the most effective land use strategies for assisting smallholder farmers in supporting their families and it is nowadays one of the key production systems that evolved agricultural life, which had aided the livelihood of rural households in Ghana. Home gardens are micro-agro ecosystems that are rich in agro-biodiversity components [3] and fall under the umbrella of urban agriculture [4].

In general, it refers to the cultivation of a small plot of land near or within walking distance of the house and it is a type of mixed cropping system that can include vegetables, fruits, plantation crops, spices, herbs, ornamental and medicinal plants, as well as livestock. It can provide subsistence, increase household food security, alleviate poverty and generate revenue, while contributing to urban and rural greenery [5].

Despite the significant potential, their contribution to livelihood is frequently misunderstood and their establishment is seen as too difficult for inclusion in urban and rural development policy and investment programs, because it is mistakenly associated with the interests of a small set of direct users [6].

Case study characteristics and results

The study was conducted at the Bantama Sub-Metro within the Kumasi Metropolitan Assembly, which is both a residential and a commercial area. Its population is entirely urban and sums 122,540 people in 36,047 households. Less than 10% of its population is engaged in agriculture, of those in agriculture 91.6% are into crop farming and the remaining is into livestock rearing or both. The area falls within the wet-sub equatorial type and the

average minimum temperature is about 21.5°C and maximum 30.7°C. The average humidity is around 84% at sunrise and 60% at sunset, with a minimum rainfall regime of 165.2mm in September and maximum of 214.3mm in June [7].



Location of Ghana, in Africa; Location of the Kumasi Metropolitan Assembly in Ghana. Source: ROOTS, from Google Earth, 2024.

A purposive sampling method was used to select four communities within the sub metro heavily on the residential area. Home gardeners were purposely selected and interviewed using semi-structured questionnaires for primary data, with a sample size of 60 responses, with 15 respondents from each community of Abrepo, Atafoa, Ohwin and Amanfrom. The data collected was analyzed using Social Package for Social Sciences, SPSS. Secondary data was collected through the review of scholarly literature and other documents on urban home gardens and urban vegetation.

From all respondents, 53.3% were male and 46.7% were female. About their marital status, 70% of the respondents stated that they are married, followed by 15%, 10% and 5% representing as single, widowed and divorced respectively. Although there is an outnumber of males, in some areas the

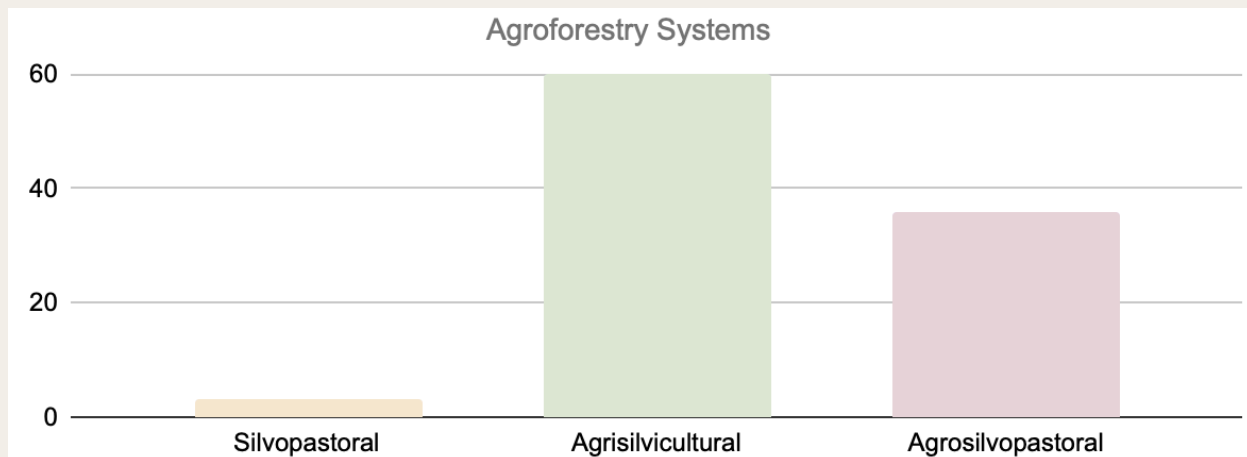
females are more involved in-home gardening than their male counterparts in the ratio of 3 females to 2 males.

Most of the respondents, 56.7%, were middle aged (between 31 and 52 years old) and are the most common workers in home gardens, while 16.7% were younger than 31 years and 26.7% were older than 52 years. Pensioners are also present in the daily work for home gardens, which implies that when people retire from work, they do not sit idle but get involved to supplement household food needs and exercise their bodies through home garden activities.

From the total sample, only 3.3% were farmers, however 96.7% of the respondents were the owners of a garden and most of them (almost 40%) were practicing it for more than 10 years and the members of their families were the workers themselves (88.3%). This makes evident that urban home gardeners come from diverse occupations [8]. A small fraction of households were those whose main livelihood means were urban farming. This is because of the difficulty of having enough farmland due to urbanization over time.

The acquisition of land for urban home gardens was mostly outright purchased (50%), which gave the gardener full ownership of the land. This is good for urban green space and food production at the household level, since the gardener can grow trees and crops for a long period of time. Most respondents also acquired the land and the garden through family inheritance (30%). This is positive for urban food production and green space since people inherit and continue the garden. Others acquired the land through other means and are the minority. This corresponds to the study of [9], who indicated that the greater security and stability of the land used for urban farming activities is to own the land, and concluded that privately owned gardens are a more secure form of land tenure than leased urban land.

Most of the respondents, 86.7%, had established the garden purposely to supplement household food needs, while 3.3% established for beautification and 5% for major income and other purposes. According to the findings, 60% of the respondents practiced agrisilvicultural (agricultural crops and trees), 36% practiced agrosilvopastoral (trees and shrubs, agricultural crops and animals), and 3.3% practiced silvopastoral (trees and shrubs, and animals) agroforestry in the study area. The home garden area does not limit the number of components but is generally lower for the animal component compared to plants and crops.



Agroforestry system practice (silvopastoral, agrisilvicultural and agrosilvopastoral) by the number of respondents (60) in Bantama Sub Metro. Source: Lewis Kadzahlo.

The structure of this agroforestry system is the same as the agrisilvicultural system and differs in composition. That is, animals like poultry, sheep, goats, rabbits, and cows were included in the system. Some of the animals were kept on free range, mostly poultry, whilst others were kept in intensive systems. This was done in order to prevent them from destroying crops in the garden.

Poultry dominated the study area (54.8%), followed by sheep (19.4%), with a few goats (16.1%), rabbits (6.5%) and cows (3.2%). About the trees, fruit trees (48.7%) like mango, orange and coconut were more in the home gardens, with a few medicinal trees. For the crops, plantains/bananas, cassava, maize and cocoyam are the most common crop components found in Bantama home gardens, representing 71.8% altogether.

Most of the gardeners, 63.9%, said the trees gave shade and food as benefits obtained from the tree components. Others stated benefits like fuelwood, fodder, windbreak and erosion control. However, 56.7% of the respondents admitted that the trees posed problems to the crops for hosting pests and disease, and breaking of branches.



Agrisilvicultural system of home garden at Ohwim. Source: Lewis Kadzahlo.



Agrisilvicultural system of home garden at Abrepo. Source: Lewis Kadzahlo.

About education, 11.7% of the respondents had no formal education, while the remaining 88.3% had received some form of education of which 23.3% of them have had tertiary education, which it is important to note that urban home gardening is practiced by people with different educational levels, ranging from the illiterate to those who have attended university [10] . Most of the respondents, 68.7%, admitted that they have been educated on the benefits of green space, for those the majority received it from radio/television (54%), others from school (25%), church or mosque (21%). This implies that electronic media help and contribute to the understanding of the benefits and importance of urban green space in the Bantama sub metro within Kumasi Metropolis. Schools and churches had to play a role in educating the public about the importance of planting trees for the city dwellers.

Benefits of Home Gardens

Increasing the quantity of green space inside the urban matrix can reduce heat surface and air temperatures, and lessen storm run-off. Urban trees are a substantial source of cooling through shade and evapotranspiration, and slows the velocity of air over buildings ('wind break'), preventing draughts, and when it is around dwellings it improves winter energy savings [11] .

Home gardens promote social, economic and environmental benefits, as summarised below.

- It is a place to relax and it helps in dealing with emotional stress;
- Children's active and passive interactions with plants influence their attitudes and actions toward trees and gardening;
- It helps engagement with their neighbours;
- It deals with food and nutrition security by providing fresh vegetables, fruits and meats, and using less chemicals;
- It increases income by selling home gardening products from animals, trees and crops;
- Beautification of the environment;
- It prevents flooding;

- It reduces the atmospheric CO2 emissions;
- It reduces wind speed and controls erosion;

Home gardens provide an avenue for recreation, helping people to ease emotional stress through working and monitoring the success of the garden. People's demand for garden products, especially herbs, can create a good rapport between neighbors.

Some respondents stated that during the COVID-19, many neighbors came for the medicinal Neem Tree leaves, forming a kind of friendship between them. Also, since some of the products in the home garden, especially seasonal fruits, are given as gifts to nearby neighbors, it has created a good interpersonal relationship between the garden owner and their surrounding neighbors. People seen with a garden in their compound are seen as hard-working people, thus enhancing their social status.

Crop production is seen both as a major and supplemental source of income to meet the family's needs to buy commodities and other inputs for their crops. As a major income, the urban farmer can tailor their production to market demand, supplying high-value and perishable items. As a supplemental income, the production has economic advantages over buying the same amount of produce at the market, especially the seasonal vegetables and fruits.

From production until the moment food reaches the urban food table, a series of intervention activities such as assembling, handling, processing, packing, transport, storage, wholesaling and retailing. This raises food prices, which further increases the ratio of food expenditure. Hence, urban home gardeners are at an advantage as they produce part of their own food, cutting short all those interventions and supplying fresh food, whereby the activity is vital in improving the family diet and reducing food costs.

Urban home garden products provide good nutritional quality. All the respondents stated that they prefer to eat food from their garden than to buy it from the market since most gardeners have a perception that most of the products on the market have chemicals that may be harmful to their health. Fruits and vegetables, in particular, are thought to be high in minerals and vitamins, and their nutritional potential is great when compared to other foods because they provide more essential nutrients in significant amounts than any other food [8].

Some challenges were encountered by the study participants, by human intrusion (26.3%), the breeding of dangerous animals (23.6%) and disease and pest control (20.8%) being the most commented on, followed by animal intrusion (18.1%). Increased darkness in spaces and other related problems were also mentioned (11.2% both). Participants (13%) reported that green spaces are used as places for dumping domestic waste (i.e., liquid and solid waste). It is therefore not surprising that the water bodies in most of the communities turned into urban waste and contributed to the seasonal flooding in the city. Other respondents revealed that urban trees posed physical threats to safety (12.2%) and considered that strong winds can uproot trees, damaging property and risking human life.

Finally, as well as promoting, the study encourages the further continuation of this database, the education on the ecosystem services in the urban area and suggests that the government should ensure more fruit trees and other crops with high economic value, not limited to aesthetic values, could be given to urban dwellers during Green Ghana Day¹ to promote urban greenery.

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¹ Green Ghana Day has been celebrated at the beginning of June since 2021 as part of a national afforestation/reforestation programme to restore Ghana's lost forest cover and contribute to the global effort to mitigate climate change.

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