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Can home gardens feed the world? The role of home gardens in urban food security and livelihoods in Ghana

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Abstract

Home gardens are a tried-and-true local tactic that local communities with little access to resources and institutional assistance frequently adopt and use in a variety of situations. The concept has received a lot of research attention in developed countries. Despite its popularity in developed countries, the academic literature on home gardens is surprisingly small in developing countries especially Ghana. In Ghana, it is still not clear what types of tree species and food crops are often planted in home gardens and what kind of impacts do home gardens make on food security and livelihoods. This study hopes to bridge this knowledge gap. The objectives of the study are 1) to identify the types of trees species and food crops suitable and preferred for planting in home gardens 2) To assess whether these trees and food crops make any significant contribution to household income and food security and 3) To identify the factors affecting the sustainability of home gardens in urban and peri-urban landscapes. A mixed method approach in a case study research design was adopted for the study. Sixty home gardeners were interviewed in Ghana with structured questionnaires and the data was analyzed using SPSS. The study established that, there were diverse of trees crops preferred by households for planting in home gardens; these include cocoa, orange, neem tree, mango, avocado, moringa, teak, cedrela, oil palm, coconut, pawpaw, cashew, guava and Indian almond. The food crops preferred include; tomatoes, garden eggs, pineapple, plantain, cassava, cocoyam, maize, okra, banana, watermelon, legumes and yam. These trees and food crops were found to contribute immensely to household income and food needs. However, several factors affect the sustainability of home gardens in the study areas, these include; destruction of gardens by stray animals, pest and disease attack, vandalism and low soil nutrient. Recommendations for improving home gardens include fencing of the facility to curtail stray animals and vandalism, mulching to improve soil nutrients and fertility, crop rotation and planting of resistant species to control pest and diseases.

Keywords: Food security, livelihoods and home gardens

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Introduction

Home gardens and urban and Peri-urban agriculture includes a wide range of practices ranging from subsistence cultivation and processing in the home to more commercialized systems (Feola et al., 2020). Over the years, small-scale farmers have used parcels of land around or near their homes to produce vegetables, fruits, herbs, and small livestock for household consumption (Soemarwoto & Christanty, 1985). These small parcels of land, often referred to as home gardens, are crucial for small-holder food security and livelihoods, according to research (Kumar & Nair 2004). An urban home garden is a farming system that combines food cropping system with plants to meet a variety of social, physical and economic needs and functions. Its functions are similar in most parts of the world, with a primary focus on subsistence and income generation (Artmann, 2018). Home gardens shows essential role in the conservation of indigenous crops, thus increasing biodiversity in rural, peri-urban and urban environments (Drescher, 1999). Even though literature on home gardens are piling up in other countries, in Ghana, there is little to no information on the various types of tree species and food crops preferred in home gardens as well as its contribution to livelihoods and factors affecting the sustainability of home garden in the country. Therefore, this research fills the knowledge gap. It compares urban and peri-urban home gardening in the Asunafo North Municipality of Ghana by identifying the various components (tree species and food crops) of home gardens in the Municipality, determining the contribution of home garden to household incomes and food security and identifying the factors affecting the sustainability of home gardening practices in the Asunafo North Municipality.

Material and Methods

Data was obtained from primary and secondary sources using purposive sampling. Primary data was obtained using structured questionnaires. Sixty (60) respondents were selected, thirty from each community using purposive sampling based on the intensive presence of home gardens within the selected communities. Data was obtained on demographic characteristics of respondents, various types of tree species and crops preferred, the contribution of home garden to household's income and food security and also the factors affecting the sustainability of home gardens. Data gathered was organized and analyzed with statistical package for social sciences (SPSS). The results obtained were presented in tables and charts. Inferential statistics was conducted to test for differences in the responses and to help draw conclusions about the population while descriptive statistics summarizes the features of the data set.

Results and discussions

Preferred tree species in home gardens

From the survey conducted, varieties of tree species were found in various home gardens in the study area like previous studies have documented (see e.g. Soemarwoto & Christanty, 1985; Tadesse et al, 2019). The most common tree species found in the study area were Mango (10%), Cashew (7%), Orange (5%), Oil palm (8%), Avocado (5%), Terminalia (5%), Cocoa (5%), Neem (3%), Moringa (3%), Cedrela (2%), Oil palm (2%), Coconut (2%) and Guava (2%). A Mann Whitney test showed no significant difference with the types of tree species found in the peri urban and urban study areas ($Z=-0.126$, $P=0.899$, Mann-Whitney Test).

Contribution of home gardens to household income and food security

From the study, majority (38%) of the respondents in the urban areas practice home garden for subsistence reason with the reason being that it helps them offer a consistent source of food for their families, while only a few (12%) do so for commercial purposes. In contrast, respondents in the peri-urban area (about 27%) practice home garden mainly for commercial purposes. Those who practice it for subsistence were 23%. Income from home gardens were used to support education (15%), clothing (13%), food (8%), utilities (5%), weedicide (2%) and health care (2%). In some cases, after meeting the needs of the family in terms of food, households sell the surplus and by so doing households are able to lower their food expenses and use income generated from sale of excess produce to offset other expenses (Feola et al., 2020).

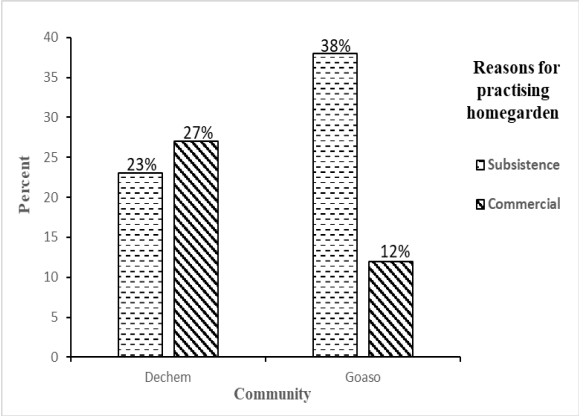

Figure 1: Reasons for practicing home garden

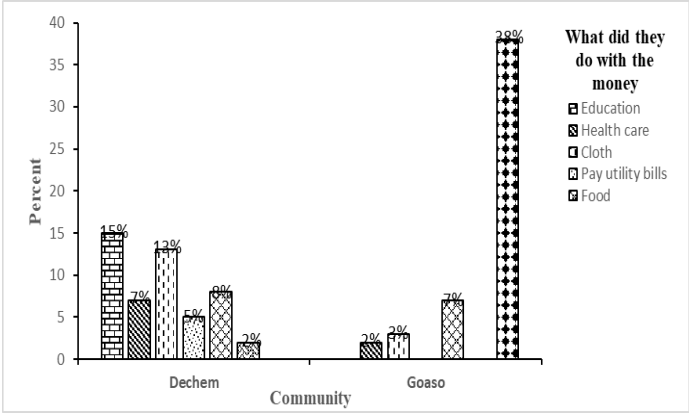

Figure 2: Usage of income earned from sale of garden produce

Challenges or constraints associated with the maintenance of home gardens

From the study, home gardeners in the study area encounter several challenges in maintaining their gardens. Some of the challenges identified by participants include destruction of gardens by stray animals (22%), littering of the environment from dry leaves and dead branches (8%), lack of water for irrigation in the dry seasons (7%), pest and diseases (5%), vandalism (5%) and low soil nutrient and fertility (3%). Destruction of gardens by stray animals was the major problem faced by the participants in the study area and this is due mainly to poor fencing of the garden. Pest and diseases outbreak are also another common constraint identified (see e.g. Tadesse et al, 2019). These pest and diseases cause damage to food crops therefore reducing their yield and market value. A Mann-Whitney test shows significant differences in opinions of respondents in the two study communities with regards to the challenges listed above (Z=-3.481 P=0.000, Mann-Whitney Test). This implies that, challenges faced by participants in the urban and peri-urban areas were diverse and not the same. While vandalism for example was a major issue in the urban area, in the peri-urban area vandalism was not a major challenge. Likewise, drought was not a big issue in the peri-urban area (Figure 3).

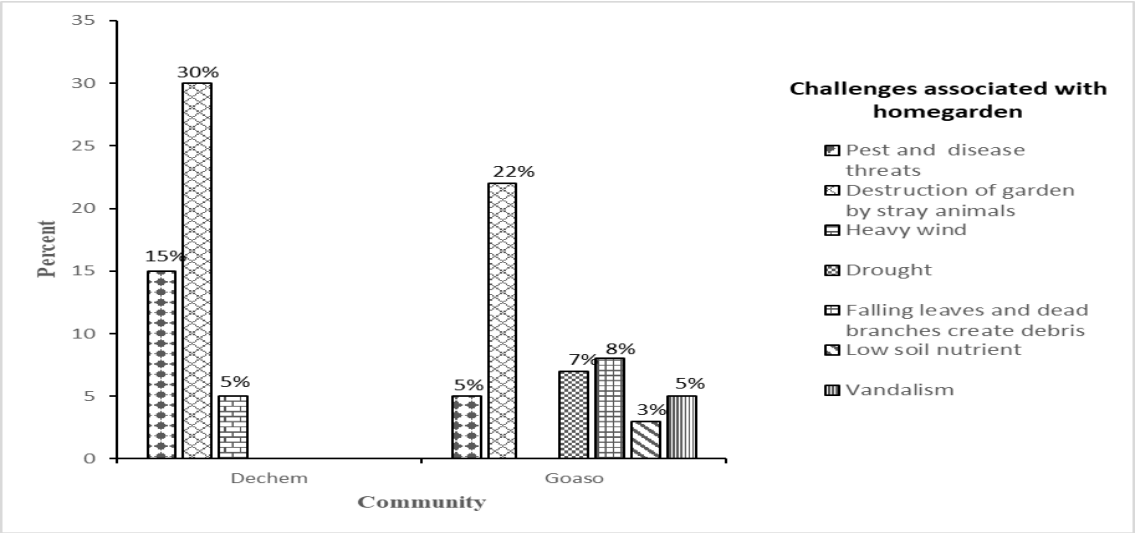

Figure 3: Challenges associated with the maintenance of home garden

Conclusions and Outlook

The study has made several interesting findings. The study has revealed that households cultivate diverse trees and food crops for many different reasons. These trees and food crops also play a role in household income and food needs in cases where households consume their produce and sell the remaining after their family food requirement had been properly met. Despite the contribution of home garden to household income and food needs there are also some challenges affecting the sustainability of home gardens in the study that needs to be addressed. These include vandalisms, littering, pest and diseases and lack of soil fertility. It is therefore recommended that home gardeners in the study area should employ effective measures such as proper fencing, regular pruning, use of gardening techniques that encourage vigorous plant growth and discourage pests, planting of pest-resistant species, mulching and crop rotation to curb these challenges.

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