Kandyan Home Gardens and Rural Economy: Case of Athipola Village in Matale District

APS Fernando*, MIK Athipola, GAS Ginigaddara and SP Dissanayaka
Department of Agricultural Systems, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka

Abstract
This study aimed to assess the flows and diversity of products and services, their economic value and contribution to the household economy of Kandyan home gardens in Athipola village in Matale district. Following a preliminary survey (n=50), twenty households were selected at random to collect fortnightly data for a period of two months. Data were analyzed descriptively. Preliminary survey revealed that there were economically important 19 vegetables, 10 leafy vegetables, 19 fruits, 4 medicinal plants and 9 spices in an average home garden. The total annual income contribution of home gardens to village economy was Rs. 6,997,926. Of which, 47%, 33%,7%, 6% and 5% derived from spices, nuts/flowers/leaves (*Cocos nucifera*, *Areca catechu*, *Anthurium andraeanum*, and *Piper betle*), fruits, fuel wood and value added products, respectively. It was also evident that the contribution of animal products to household income was low (0.02%) whereas plant products contributed 35.5%. It can be concluded from the results that the contribution of home garden products to the household economy of Kandyan Home Gardens of Athipola village is compelling. Spices are found to be the major income contributor while livestock recorded the least. The contribution of home gardens to the Athipola village can further be improved through diversification and introduction of livestock components to the system.

Keywords: Home garden products, Kandyan home garden, Rural economy
Corresponding author:prageethaps@yahoo.com

Introduction

Home Garden (HG) is frequently found as a predominant cropping system in many parts of Sri Lanka. HG in rural and semi rural household in the Kandy region are called Kandyan home gardens (Kandyan forest garden). Kandyan Home Garden (KHG) is regarded as traditional multispecies agro forestry systems with a complex structure and multiple functions (Perera and Rajapakse, 1991). It is essentially a system of mixed cropping with a variety of trees, shrubs and herbs which provide various products.

Diverse products of KHGs provide immense benefits to people living in rural areas and sometimes also to those live in urban areas. Households derive food supplements, traditional medicines, low cost building materials, fuel wood and supplementary income (Gunatilake, 1991). KHG systems therefore contribute to rural food security directly by supplying food sources and indirectly by escalating household income and thereby the purchasing power that makes people live in these home gardens have more access to food, financially. According to Gunathilake, (1991) the contribution of home garden products to low income families accounted for up to 31% of their total income.

Such evidences suggest that benefits of KHG systems are substantial. A considerable time has passed since the study of Gunathilaka, (1991) on the subject, during which period; HG systems could have been changed. Therefore this study conducted to assess the flows and diversity of KHG products and services, their economic value and contribution to the rural economy of a rural village. Filling of these gaps in knowledge has a value in facing challenges of rural poverty and food security and formulating policies to arrest poverty and food insecurity.

Materials and Methods

This study was conducted in Athipola village in Matale district of the central province located in Yatawatta divisional secretariat division about 12 km north to the Matale city and about 509 m above the mean sea level. Its vegetation is characterized by moist monsoon rain forests and Kandyan home gardens that are similar to those located in Kandy District of Sri Lanka. There were 109 such home gardens in the village.

Collection of data consisted of two phases and at the first phase a preliminary survey was conducted with a sample of 50 home gardens selected at random from the total of 109 home gardens to identify and assess home garden product flows and diversity. Interviews were conducted with household heads of selected home gardens using a structured questionnaire to collect data on flora and fauna diversity of home gardens, products collected, consumed, sold and their quantities in general. In the second phase of data collection, a fact sheet was

produced using the information generated at the preliminary survey and used to collect data on quantities of specific products collected, consumed and sold in fortnightly intervals covering a period of two months from April to May 2014. Researchers fortnightly visited randomly selected 20 home gardens from those used in the first phase to collect data. Factsheets were filed up by researchers in person having fortnightly discussions with respective household heads/spouse.

To value home garden products, market prices have been used. For this purpose, average annual prices published by the Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI) and Department of Ayurvedic Medicine (DAM) were used for commonly available marketable home garden products. A local market survey was conducted to find the prices of other products that were published neither HARTI nor DAM.

Results and Discussion

Nine types of tangible product flows were identified from an average HG in the village. They include (1) vegetables, (2) leafy vegetables, (3) fruits, (4) medicinal plants, (5) fire wood, (6) spices, (7) value added products, (8) nuts, flowers and leaves and (9) Livestock. Of them 20 vegetables, 10 leafy vegetables, 18 fruits, 4 herbal plants, 9 spices, and 5 other nut, flower and leaf species and 6 value added products are used for both trade and consumption purposes by householders and there was a high level of product diversity. However, livestock diversity of home gardens was found to be very low. Only buffaloes and poultry were found occasionally in less than 10% of households.

According to the Table 1, largest contribution to household income has been made by species (45.50%) followed by harvested nuts, flowers and leaves (31.87%). Home gardens in this village largely consist of plantation and minor export crops like Pepper (*Piper nigrum*), Clove (*Syzygium aromaticum*), Nutmeg (*Myristica fragrans*) Coconut (*Cocus nucifera*) and Areca nut (*Areca catechu*) and that could be the reason to have high income contribution from above two product categories. Since livestock is rarely found in these home gardens, the least income contribution was recorded from livestock (0.02%). Contribution of firewood was 9.13% and this may be due to the high availability of woody trees in these home gardens. Contribution of fruits and value added products were 6.35% and 5.19%, respectively. That was attributed to the availability of fruit trees like mango (*Mangifera indica*), Banana (*Musa acuminate)*, Jack fruit(*Artocarpus heterophyllus)*, Avocado (*Persea Americana)*, Papaw (*Carica papaya*), Rambutan (*Nephelium lappaceum)* and value added products such as white Pepper, Mee oil (*Madhuca sp.*) and Coconut oil. It was thus found that the contribution of vegetables and leafy vegetables together to the household income hardly exceed 2%. However, in general, 35.5% of annual household income was supplemented by home garden products given above.

Table 1: Product flows and cash income of an average home garden

Products	Cash income (Rs:)	%
Vegetables	5,298	1.47
Leafy vegetables	183	0.05
Fruits	22,929	6.35
Firewood	32,937	9.13
Medicinal plant	1,524	0.42
Spices	164,197	45.50
Value added products	18,715	5.19
Livestock products	71	0.02
Nuts, flowers and leaves	115,043	31.87

It was found that firewood gives the highest contribution to consumption (36.46%). That is mainly due to 95% householders collects their firewood from home gardens to supplement energy need for cooking purposes. Nuts, flowers and leaves accounted for 27.34% (to which about 80% constitute of coconut) of consumption contribution recording the second largest. This was mainly attributed to the use of home garden coconuts in cooking. Contribution of fruits, spices, vegetable, leafy vegetables and value added products and medicinal plants to the consumption were 13.17%, 9.4%, 7.15%, 4.65% and 1.50%, respectively. Consumption contribution of these four products remained at lower level compared to that of firewood and Nuts, flowers and leaves categories. Consumption contribution of livestock products remained too low at 0.09% and it was mainly furnished by eggs of backyard poultry.

Contribution of spices to cash income was greatest at 51.46% (to which income from pepper constitute more than 95%) followed by Nuts, flowers and leaves (32.25%), value added products (11.88%) and fruits (3.65). It is clear from the result that these products are the major sources of income flows to households. In contrast, the cash income contribution of other product flows remained at very low level

revealing their larger contribution for household consumption.

It was evident from the result that up to 25% of the household income was supplemented by home gardens of 40% households. A 26-50% supplementary income has derived from home gardens by another 30% of households. Remaining 10% and 15% of households obtained 51-75% and more than 76% of subsidiary income respectively from their home gardens. These results clearly shows that income derived from home gardens play an indispensable role in the household economy.

Based on the result of this study several conclusions can be drawn. Level of diversity of domesticated and marginally domesticated plant varieties are favorable compared to the diversity of domesticated animals in KHGs. Though spices and nuts have contributed largely to the household income their varietal diversity restricted to 2 - 3 species implying high income risk. Consumption contribution of home gardens is relatively low compared cash income contribution and it also has a lower contribution to food and high contribution to energy. Very low contribution of livestock either to consumption or cash income was apparent. However, in general, the contribution of home garden income to household economy was evident. As far as the sustainability of income and food security is concerned, introduction of micro livestock, perennial vegetables and other spices like clove to the home garden system would be worthy options.

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