

COMPARATIVE STUDY ON PLANT DIVERSITY AND THEIR USES IN HOMEGARDENS OF DELGODA AND KADUWELA AREAS IN SRI LANKA

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INTRODUCTION

Homegarden system is characterized by multispecies production system on the area of land around the house to meet different physical and economic needs and functions (Kumar & Nair 2007). Homegardens are classified under different terminology, such as mixed, kitchen, backyard, farmyard, agroforest system, horticulture and homestead garden (Bandara, 2015; Mohri et al., 2013, Emmanuel, 1992). Homegarden system is vital for providing supplemental food and nutritional sources for livelihoods. The main economic benefits from the homegardens are food and nutritional security improving a health used by medicinal plants, can generate the income for householders, create environment beauty, and self-satisfactions.

Homegardens are found in both rural and urban areas. Rural homegardens have space to cultivate multipurpose big trees, such as Jackfruit, Breadfruit, Nadun, Teek, and Halmilla. In contrast, semi urban homegardens have limited land space and therefore small budded plants and ornamental plants are grown in those gardens using racks, pots, bags and rooftop garden. Understanding how homegardens represent green infrastructure and food security is vital for city planners to make pragmatic urban planning. This study examines the plant diversity of homegardens in Delgoda and Kaduwela areas corresponding to their role in plant uses.

METHODOLOGY

The study area is located in western province spanning over Gampaha and Colombo Districts representing rural and semi-urban areas respectively. The homegardens were assessed through field observation and discussion with households using semi-structured questionnaire. Fifty randomly selected households from Delgoda area and thirty randomly selected households from Kaduwela area were analyzed. This study surveyed ethnobotanical values of plants in the homegardens. A datasheet was compiled to gather the information on plant species grown, plant products, and size of homegardens.

RESULTS AND DISCUSSION

This study presents the ethnobotanical values of the cultivated crops in the homegardens of rural and semi-urban landscapes. For example, plant utilities, average species richness, and dominant species in the homegardens of Delgoda area (i.e. rural landscape) are shown in Table 1. Fruit crops are the mostly seen crop species (7 spp.) in homegardens in the area. The main purpose of cultivation of fruit crops is for supplementary income for the household. In addition, vegetables are cultivated in the homegardens especially for home consumption.

We compared the cultivated crops in rural (Delgoda) and semi-urban (Kaduwela) areas to understand the regional diversity of cultivated crops (Table 2). We recorded 176 plant species belonging to 138 genera and 65 families in Delgoda area, while a total of 58 species belonging to 49 genera and 36 families were recorded in Kaduwela area. Of the recorded species 42 species were common for both areas. The majority of plants in Delgoda area are used for medicinal (24% or 43 spp.), fruits (22% or 39 spp.) and vegetables (20% or 36 spp.) purposes. The medicinal plants are grown only for self consumption and traditional medical practices. The household income is mainly gained from fruit and vegetable crops such as, Rambutan, Banana, Amberella and Bird pepper in Delgoda areas. Of the recorded plants, 19 species were used for fruit crops followed by 10 vegetable crops and 8 beverage/sap-yielding

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crops in Kaduwela area (Table 2). The main household income generated crops in Kaduwela area were Jak, Coconut, and Rose apple.

Table 1. Current crop species diversity in homegardens in Delgoda

Plant products	Average per homegarden	Mostly seen species
Fruit	7	<i>Nephelium lappaceum</i> (Rambutan), <i>Mangifera indica</i> (Mango)
Vegetable	4	<i>Moringa oleifera</i> (Murunga), <i>Luffa acutangula</i> (Vetakolu)
Spices	2	<i>Piper nigrum</i> (Pepper), <i>Zingiber officinale</i> (Ginger)
Medicinal	2	<i>Azadirachta indica</i> (Neem), <i>Asparagus falcatus</i> (Hatawariya)
Masticatories	1	<i>Piper betle</i> (Betel pepper), <i>Areca catechu</i> (Areca-nut)
Beverage	1	<i>Coffea arabica</i> (Arabian coffee), <i>Cocos nucifera</i> (Coconut)
Ornamental	1	<i>Bambusa vulgaris</i> (Bamboo), <i>Ixora coccinea</i> (Ratambala)
Tuber	1	<i>Xanthosoma sagittifolium</i> (Coco yam), <i>Manihot esculenta</i> (Cassava)
Timber	<1	<i>Swietenia mahagoni</i> (Mahogany), <i>Tectona grandis</i> (Teak)

Table 2. Cultivated crops in the homegradens in Delgoda and Kaduwela area

Plant products	Delgoda rural area (50 households)	Kaduwela semi-urban area (30 households)
Medicinal	43 spp.: <i>Citrus aurantifolia</i> (Lime), <i>Asparagus falcatus</i> (Hathawariya)	5 spp.: <i>Azadirachta indica</i> (Neem), <i>Curcuma longa</i> (Turmeric), <i>Cassia auriculata</i> (Matara tea)
Fruits	39 spp.: <i>Carica papaya</i> (Papaya*), <i>Mangifera indica</i> (Mango), <i>Musa</i> spp. (Banana), <i>Nephelium lappaceum</i> (Rambutan)	19 spp.: <i>Carica papaya</i> (Papaya*), <i>Aegle marmelos</i> (Bael fruit), <i>Annona reticulata</i> (Bullock's heart), <i>Averrhoa carambola</i> (Kamaranga)
Vegetables	36 spp.: <i>Capsicum frutescens</i> (Bird pepper), <i>Artocarpus incisus</i> (Breadfruit tree), <i>Basella alba</i> (Niviti*)	10 spp.: <i>Centella asiatica</i> (Gotukola), <i>Basella alba</i> (Niviti*), <i>Sesbania grandiflora</i> (Katurumurunga)
Ornamental	23 spp.: <i>Bambusa vulgaris</i> (Bamboo*), <i>Filicium decipiens</i> (Pehimbiya*)	6 spp.: <i>Bambusa vulgaris</i> (Bamboo*), <i>Filicium decipiens</i> (Pehimbiya*)
Spices	11 spp.: <i>Murraya koenigii</i> (Curry leaf*), <i>Piper nigrum</i> (Pepper*), <i>Pandanus amaryllifolius</i> (Rampe*)	4 spp.: <i>Murraya koenigii</i> (Curry leaf*), <i>Piper nigrum</i> (Pepper*), <i>Pandanus latifolius</i> (Rampe*)

Timber/Tree nuts	11 spp.: <i>Swietenia mahagoni</i> (Mahogany), <i>Tectona grandis</i> (Teak*), <i>Cocos nucifera</i> (King coconut*)	4 spp.: <i>Diospyros ebenum</i> (Kaluwara), <i>Tectona grandis</i> (Teak*), <i>Cocos nucifera</i> (King coconut*)
Tuber	7 spp.: <i>Xanthosoma sagittifolium</i> (Coco yam), <i>Manihot esculenta</i> (Cassava)	--
Beverage/Sap yielding	3 spp.: <i>Coffea arabica</i> (Arabian coffee), <i>Camellia sinensis</i> (Tea)	8 spp.: <i>Caryota urens</i> (Kitul palm), <i>Citrus sinensis</i> (Orange)
Masticatories	3 spp.: <i>Piper betle</i> (Betel pepper*), <i>Areca catechu</i> (Areca-nut *)	2 spp.: <i>Piper betle</i> (Betel pepper*), <i>Areca catechu</i> (Areca-nut *)

*Common species recorded in the homegardens of two areas

Of the recorded species, 57 % and 76% of the species cultivated in homegardens are edible in Delgoda and Kaduwela area respectively. Of the recorded species, 42 species were common for both areas. The most frequently encountered homegarden plants were Mango (*Mangifera indica*), Rambutan (*Nephelium lappaceum*), Coconut (*Cocos nucifera*), and Curry leaf (*Murraya koenigii*).

CONCLUSIONS/RECOMMENDATIONS

The homegarden in Delgoda showed a remarkable proportion of medicinal plants growing spontaneously in the garden. The reason for growing medicinal plants in this area is due to the high demand of the medicinal plants by traditional medical practitioners in the area. In contrast, fruit crop cultivation in Kaduwela area demands for household consumption. In conclusion, homegardens are particularly interesting for *in situ* conservation of diverse plants and it needs to understand the household interest on particular plants to make sustainable homegarden program.

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