

**QUANTIFICATION OF CARBON STOCKS AND PLANT DIVERSITY IN
TROPICAL HOME GARDENS IN *KUMBUKWEWA* TANK CASCADE,
GOMARANKADAWALA, SRI LANKA**

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Dry zone home gardens in village tank cascade system can be identified as potential agroforestry units, which can be further developed to increase resilience to climatic changes. Quantification of aboveground biomass carbon is important in further developing these home gardens into climate smart agroforestry units. This study was conducted to quantify aboveground carbon stock and to identify tree and plant species diversity in *Gomarankadawela* area in the *Kumbukwewa* cascade in the *Trincomalee* district of Sri Lanka. A total of 44 home gardens were categorized according to size (<0.2 ha small scale, 0.2 - 0.8 ha medium scale and >0.8 ha large scale) and used for the data collection. Diameter at breast height, height of the trees and plants with their abundance were estimated. Allometric equation was used to calculate aboveground carbon stock. Shannon Winner Index (SWI) was used for calculating tree and plant species diversity. Mean above ground carbon stock was 30 Mg C ha⁻¹ irrespective of the land size. A total 3338 trees and 78 different tree and plant species belonging to 33 tree and plant families were recorded. Mean SWI was 2.00 ± 0.88. The carbon stock and tree and plant diversity among home garden groups were not significantly different. It can be concluded that tropical home gardens have potential to store more carbon and optimize tree density with a proper mixture.

Keywords: Carbon stock, Home gardens, Plant diversity, Tank cascade system