

Estimation of Carbon Storage of Different Forest Plantations Established by Sadaharitha Plantations Limited

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ABSTRACT: *In order to mitigate the global warming resultant due to the rapid industrialization, the "Green Economy Concept" has been introduced to the world which is defined by the United Nations Environmental Programme as one that results in improving human well-being and social equity, while reducing environmental risks and ecological scarcities. Therefore green economy leads to low emission of CO₂ and similar gases and efficient resource utilization with great social care.*

Admiring the green economy concept, Sadaharitha Plantation Limited (SPL), the Gold Winner of Green Awards in 2012, is engaged in forest plantations management with Sandalwood, Teak, Mahogany, Rambutan and Agarwood to earn foreign exchange to the country. SPL manages its all plantations under ISO 14001 principles and Teak and Sandalwood plantations are being prepared to obtain Forest Certification. In addition, natural forest patches are maintained whenever possible in these plantations for the purpose of biodiversity conservation and landscape protection. In order to minimize the environmental damage due to the application of chemical fertilisers, over 1,500 MT of compost are annually made within the estates to use as organic fertiliser. Further, the company has provided over 900 direct green employment opportunities and introduced innovative forest-based income generation opportunities such as Agarwood Homegarden Concept to the villagers as a strategy to eliminate persistent poverty in Sri Lanka.

This paper investigates the carbon storage values of 156.0, 196.6, 3.4 and 13.9 ha of Sandalwood, (2 and 3 years old), Teak (2,3,4,5,6, and 7 years old), Mahogany (10 years old) and Rambutan (9 years old) plantations respectively managed by SPL in Colombo, Kalutara, Rathnapura, Puttlam, Badulla, Galle, Matale and Matara Districts. For this purpose, representative trees were selected from each species of each age and the tree volumes were estimated using appropriate volume functions. Then the carbon values were estimated using the guidelines of Carbon-Fix Standards V3.2 for each species. These values were then projected to 20 years after planting considering the growth rates and removal of trees in thinning.

According to the results, carbon storage values for 10 year old Mahogany plantations is 242.0MT/ha and 9 year old Rambutan plantations is 3.8 MT/ha. The carbon values for 2 and 3 year old Sandalwood plantations are 0.1 and 0.6 MT/ha while those values for 2, 3, 4, 5, 6 and 7 year old Teak plantations are 4.9, 9.7, 13.1, 23.4, 29.7 and 50.1 MT/ha respectively. At the 20th year, the carbon contents of Mahogany, Rambutan, Sandalwood and Teak plantations will be 242.0, 41.3, 69.5 and 326.7 MT/ha respectively which are equivalent to 887.2, 151.4, 254.78 and 1,197.7 MT/ha respectively.

Keywords: *Tree biomass, mahogany, sandalwood, teak, green economy*

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