

## ESTIMATION OF CARBON STOCK IN A TEAK PLANTATION IN PANDULAGAMA DIVISION, ANURADHAPURA, SRI LANKA

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Carbon sequestration aided by plantation forestry forms an important option for climate change mitigation. Teak (*Tectona grandis* L) is the dominating species in forest plantations in Sri Lanka; mainly uses for timber. Estimating of carbon stock in a teak plantation is useful for drawing scientific and economic attention of investors on carbon stocks. The objective of the study was to estimate carbon stocks in a teak plantation at *Pandulagama*, Anuradhapura at the time of final felling. Standing tree measurements were taken from eight (8) sampling plots (5 x 40 m) across teak plantation (50ha). Stem Diameter at Brest Height (DBH) and tree heights were measured and allometric equations were used to calculate above-ground and below-ground biomasses. Soil samples were also obtained from 0 to 30cm depth from the plots and the soil organic carbon content was determined using Walkley and Black method. Soil Bulk density was tested using core sampler method. Total carbon stock of the plantation was calculated by summing total carbon of biomass and total carbon stock of soil. According to the results, above ground biomass was ranged between 276.62kg and 3151.89kg and the mean biomass was 784.32kg, the below ground biomass was ranged between 72.52kg and 181.56kg. The estimated carbon stock of soil was 49.44  $\text{tha}^{-1}$  and biomass was 71.75  $\text{tha}^{-1}$ . The total carbon stock estimated of the teak plantation at the age of felling was 121.2  $\text{tha}^{-1}$ , which was equivalent to 444.4 t CO<sub>2</sub>. Using a carbon price of US\$10 per tonne, total revenue from carbon-based incentives for the teak plantation along with the soil carbon stock per hectare was 4,444 USD. This study is a piece of evidence for climate change mitigation potential of teak forest plantations in Sri Lanka at the time of felling.

**Keywords:** Biomass, Carbon sequestration, Climate change, Soil carbon