Assessment of Carbon Storage in a Selected Plantation in Deraniyagala, Sri Lanka

E.M.M.D. Ekanayaka*, E.P.N. Udayakumara, and D.N.S. Wanniarachchi

Department of Natural Resources, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka.

*maheshidila@gmail.com

The complex process of absorbing carbon dioxide by leaves from the atmosphere and storing it in the soil carbon pool is known as soil carbon sequestration. A quality vegetation cover accelerates this process. Carbon storage in the soil helps to increase the soil quality in several ways viz giving soil structure, and storing nutrients and water that are required for plants and soil organisms. Therefore, carbon storage in the soil of agricultural lands is important to enhance productivity. Thus, this study aims to estimate the current status (as in the year 2022) of carbon storage in a selected plantation in Deraniyagala, Sri Lanka. The Integrated Valuation of Ecosystem Services and Trade-offs (InVEST) carbon storage and sequestration model was used for this estimation. This model uses four carbon pools that are in the environment; carbon stored in above-ground biomass, below-ground biomass, soil, and dead organic matter. As a function of the storage in the four carbon pools, this model estimates the total carbon storage in the study area. The estimated mean total carbon storage in this plantation was 200.5 t/ha ranging from 0 to 257 t/ha. Furthermore, this study shows that carbon storage in soil is the most prominent among other carbon pools. It was 73.16 t/ha ranging from 0 to 100 t/ha. It indicates that the land owner has maintained suitable soil conservation measures. Furthermore, the newly introduced compost project may affect the amount of carbon stored in the soil. The findings of this study will help to implement soil and vegetation conservation practices in agricultural lands to enhance soil health and agricultural productivity through increasing the status of carbon storage and finally achieve the country's Sustainable Development Goals.

Keywords: Carbon Storage, InVEST, Carbon Storage and Sequestration Model, InVEST Plantation