

PRELIMINARY STUDY ON EVALUATING THE CARBON STOCKS PRIOR TO SEAGRASS RESTORATION IN SINNA ARICHCHAL, KALPITIYA, SRI LANKA

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Seagrass meadows serve as significant carbon sinks, playing a crucial role in climate change mitigation. They capture CO₂ through photosynthesis, forming organic matter in tissues and sediments, which enhances carbon storage via sediment stabilization. The reduction of seagrass leads to decreased carbon sequestration, exacerbating climate change impacts. This ongoing study focuses on establishing a one-hectare seagrass meadow and evaluating its impact on blue carbon storage. Prior to restoration, four 60 cm-deep soil core samples were collected from both the donor and the restoration sites at Sinna Arichchal Island, Kalpitiya, Sri Lanka, using a Russian peat auger. Each core sample was divided into six 10 cm subsamples (24 total subsamples) based on depth and analysed using the loss-on-ignition method to quantify total organic carbon content. The mean total organic carbon percentage was compared using the t-test, revealing a higher percentage at the donor site (7.28 ± 2.89) than at the restoration site (6.71 ± 3.40), suggesting a potentially greater carbon content at the donor site. However, this difference was not statistically significant ($t = 0.45, p = 0.667$). The higher carbon percentage at the donor site may be attributed to the presence of seagrass, less disturbance, and better preservation. Further sampling and analysis are necessary to confirm this trend with statistical significance. To ensure the successful establishment of the restored seagrass, regular monitoring of growth, health, and environmental conditions is essential. Post-restoration surveys will analyse and compare sediment samples to assess changes in blue carbon stocks before and after restoration, determining the extent of potential improvement in carbon storage.

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