

Effect of salinity in altering microbial biomass carbon at saltmarsh ecosystems at Mannar region, Sri Lanka

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Saltmarshes are transitional habitats located between the ocean and land, which are inundated by daily, or occasional flooding of saltwater brought in by the tides. Despite the ecosystem's high productivity and potentiality in soil Carbon (C) sequestration, it is the most understudied and poorly conserved ecosystem of all Blue Carbon ecosystems. Therefore, a study on Soil Organic Carbon (SOC) and Microbial Biomass Carbon (MBC) of saltmarsh ecosystems located at Mannar South bar and Vankalei (West coast of Mannar) was conducted. Random sampling was done from the top layer of soil (0-15 cm from surface) using an auger. Soil Electrical Conductivity (EC), pH, MBC and SOC were measured and analyzed using MINITAB 17. The pH was around at highly basic levels of 8.4 and other variables varied from and up to 0.76-11.25 mS/cm, 0-1.6%, and 0.008- 1.4%, respectively. Cluster analysis of variables revealed a riveting positive correlation between EC and MBC ($r=0.7$). However, a similar correlation was not observed between EC and SOC. Simultaneously, general MANOVA was performed, which resulted in a significant difference ($p<0.05$) at MBC with respect to soil salinity gradient. Therefore, we can conclude that soil microbial communities get affected by salinity. Thus, enzyme activity in the soil microbial of salt marsh has not been inhibited despite the high ionic conductivities. Though the effect of EC on SOC was faint therefore, developmental activities around salt marshes should be properly managed in order to conserve these ecosystems.

Keywords: saltmarsh and microbial biomass carbon

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