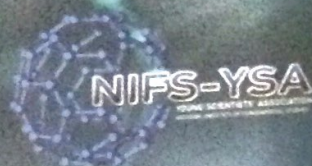




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Evaluation of Mangrove Ecosystems in Regulating Atmospheric Carbon

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Human induced exaggerated levels of atmospheric Carbon dioxide (CO₂) and consequent global warming are major environmental problems at present. Carbon capture and storage (CCS) can be adapted to mitigate the excess atmospheric C against the global injurious level. Mangrove, salt marshes and sea grass beds (coastal environments) which capture and store C intensively are known as "Blue Carbon" ecosystems. Of these, mangrove ecosystems play a major role and, sequester atmospheric CO₂ in the range of 300- 900 MT per year, which is comparable with 7-20 % of per annum emission surplus resulting due to deforestation and degradation of terrestrial forests. This review study assesses the potentiality toward carbon sequestration by the mangrove ecosystems. The carbon stocks have been estimated and the preserved proxies of past mangroves have been analysed. Mangrove is a highly productive ecosystem, situated along the tropical and sub-tropical coastlines, where they have developed structural and functional adaptations (e.g. salt and anoxic tolerance) to withstand under the aquatic-terrestrial ecotone. The mean above ground Net Primary Production (NPP) rate in mangroves 11.1 tons Dry Weight ha⁻¹ year⁻¹. Mangroves total carbon storage has been calculated to reach as high as 1023 MT. ha⁻¹ at both above ground vegetation and below ground (surface to 100 cm depth). There is a constant flux in the ecosystem due to natural (e.g. erosion) and anthropogenic causes (e.g. deliberate clearings, conversion in land use). However, a significant influence is caused by the fluctuations in sea level, due to global warming itself on the extent and function of the mangrove ecosystem. Though, it has been lesser assessed. Therefore, through the establishment of baseline data, it will be possible to utilize this information as a tool for the management and conservation of the ecosystem.

Keywords: carbon sequestration, disturbances, global warming, mangrove