RESEARCH ARTICLE

INVESTIGATION ON QUALITY OF COIR WASTES BIOCHAR FOR SOIL AMENDMENT AND SOIL CARBON SEQUESTRATION APPLICATIONS

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Abstract: In this paper, coir wastes biochar was prepared from coirwaste biomass at low temperatures (400-450°C) and the quality of the biochar was tested with reference to the International Biochar Initiative (IBI) criteria for soil amendment and soil carbon sequestration applications. The coir wastes biochar had mass yield (20.02%), H/C_{org} (0.48), O/C (0.59), pH (7.28) and EC (0.09 dS cm^{-1}). Carbon (%) of the coir waste biochar was found to be increased from 34.52% to 44.98%. The nitrogen (%) and sulphur (%) was found to be low in the coirwastes biochar compared to the raw biomass, indicating that it would produce less NOx and SOx emissions during combustion. The total organic carbon (%) was notably increased from 18% to 52% and follows class 2 biochars (≥30<60%) based on the criteria given by IBI. It is observed from the results that the thermo-chemically converted coir wastes biochar had greater potential and stability to sequester organic carbon in the soil because H/C_{org} of the biochar was found to be <0.70 and all other characteristics were in the threshold criteria as declared by IBI.

Keywords: Coir wastes biomass, Biochar, Organic carbon, Stability, IBI criteria

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