Application of Rice Husk Biochar to Desalinate Irrigation Water

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Abstract

In recent years, use of carbon-based adsorbents has increased in pollution reduction from aqueous solutions. Biochar is a carbon-rich porous material, with low costs, and environmentally friendly, which is prepared by pyrolysis of biomass. In this study, potential of rice husk biochar to desalinate irrigation water with EC of 5, 15 and 25 dS/m was investigated. The effect of pyrolysis temperatures of 400°C (RHB4), 600°C (RHB6) and 800°C (RHB8) on selected physicochemical characteristics and their desalination power was considered. The results showed that pyrolysis temperature has a significant effect on biochar properties. RHB6 with 301.1 mg g^{-1} desalination capacity was more efficient than the other biochars. This adsorbent had maximum surface area (211 m^2 g^{-1}) and total pore volume (0.114 cm^3 g^{-1}). The results of this study could open new horizons to manage the agricultural wastes and simultaneously reduce the cost of irrigation water.

Keywords: Pyrolysis, Adsorbent, Saline water.

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