

Treatment of textile azo dyes direct red and acid orange using selected agricultural wastes

Dr. R. Leena

Assistant Professor, Department of Zoology and Research Centre,

Scott Christian College (Autonomous), Affiliated to Manonmanium Sundaranar

University, Tirunelveli, Tamil Nadu, India.

Email: rleenar@gmail.com

Abstract

Agricultural waste, which is ubiquitous, can be used as an effective adsorbent because of its enormous availability in the local environment. Paddy straw, orange peel and rubber seed coat were used as biological adsorbents in the present study. Decolouration assay was carried out using two dyes Direct red and Acid orange. Direct red showed 98.1% decolourization when treated with rubber seed coat and with Acid orange 97.2% decolourization was attained. The toxicity also got reduced in the agricultural waste treated dye solutions. The reduction in colour correlated with the mortality of mosquito larvae. Rubber seed coat treated Direct red and Acid orange recorded minimum mortality after 48 hours of treatment. The process of adsorption of dye solution on the waste materials as well as the process of recycling, regeneration and reuse of the agricultural wastes should be further evaluated. Based on the present investigation, paddy straw and orange peel are recommended as bio-adsorbents for the removal of organic dyes from industrial wastewater.

Keywords: Paddy straw, orange peel, Direct red, Acid orange, biodecolourization.