

Wanassanun Ojaka 2013: Dyes Removal in Textile Wastewater by Using Coffee Endocarp Residual in Mixed with Soil as Growing Materials for Umbrella and Cattail Plants. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Nipon Tungkananuruk, Ph.D. 79 pages.

The objective of this research was to study the feasibility of using coffee endocarp residual and macadamia shell from Doi Tung Development Project to remove dyes from textile factory wastewater. Batch experiments were performed to investigate the suitable condition for removal of 9 dyes (Super Black G, Turquoise H-GN, Yellow LS-4G, Yellow LS-R-01, Orange LS-BR, Navy LS-G, Red LS-B, Blue LS-3R and Br.Blue LS-G). The results showed that at the suitable condition (9 gram of coffee endocarp residual 100 mL of 20 ppm of synthetic wastewater pH 7 and contact time 3 hr.) of the dried and charcoal adsorbents from coffee endocarp residual 63.68% and 67.98% dye removal in the synthetic wastewater respectively. The adsorption mechanism of both dried coffee endocarp and charcoal were residual conformed to the langmair adsorption isotherm. The continuous flow experiment was performed by using glass column size 5.8 x 37 cm that containing with gravel 7 cm., fine sand 3 cm, coarse sand 2 cm and mixing of dried coffee endocarp residual and soil at 1:6. The removal percentages of adsorbents was obtained at 98.26 % from synthesis waste water and 78.73 % for Doi Tung textile factory effluent respectively. In addition, the constructed wetlands system of the King's Royally was reproduced by the filtrated lysimeter technique. The experiment was carried out by using the square plastic tank with size 51x51x54 cm that packing with growing material layers as the continuous flow experiment with growing Cyperus Corymbosus Rottb and Typha Angustifolia, and the synthetic wastewater was treated at contact time 3 hours. The results demonstrated that 98.19 % (for Cyperus Corymbosus Rottb) and 99.56 % (for Typha Angustifolia) of dyes were removed.

Student's signature

Thesis Advisor's signature

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