ABSTRACT

Thesis Title	:	The Study on Peat Utilization as Cation Exchanger
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The chemical composition and particulate nature of peat make it an effective cation exchanger and adsorbent. This useful property was enhanced by treatment with H_2SO_4. The capacity for ion exchange and adsorption under various treatment conditions was investigated. The peat samples from Kab-Daeng swamp in Narathiwat province were treated with 1N, 6N and 18N H_2SO_4 in reflux condition for 1, 2 and 3 hrs.

After treatment, peat samples (Particle size 0.5-1.0 mm.) were packed into cation exchange column. The column exchange capacity was determined by Roam and Haas's method. The heavy metal, Cd, Cu and Zn were used to determine the adsorption capacity of each sample. Then for the highest adsorption capacity samples for each metal the efficiency of recovery were determined by using HNO_3 as elutriant.

Investigations showed that peat can be a cation exchanger and adsorbent. The optimum acid treatment was to use 1N H_2SO_4. Untreated peat was also efficeient in removal of heavy metals. It was found that peat after treatment with 1N H_2SO_4 can adsorb 235 mmol Cd per kg.peat, 280 mmol Cu per kg.peat and 166 mmol Zn per kg.peat. The untreated peat can adsorb 197 mmol Cd per kg.peat, 271 mmol Cu per kg.peat and 124 mmol Zn per kg.peat. Moreover it was found that the untreated peat can be regenerated by HNO_3 giving percent recoveries of Cd, Cu and Zn 52.1, 91.0 and 82.7 respectively.
