

Ammonia nitrogen removal from aqueous solution by local agricultural wastes

ABSTRACT

Excess ammonia nitrogen in the waterways causes serious distortion to environment such as eutrophication and toxicity to aquatic organisms. Ammonia nitrogen removal from synthetic solution was investigated by using 40 local agricultural wastes as potential low cost adsorbent. Some of the adsorbent were able to remove ammonia nitrogen with adsorption capacity ranging from 0.58 mg/g to 3.58 mg/g. The highest adsorption capacity was recorded by Langsat peels with 3.58 mg/g followed by Jackfruit seeds and Moringa peels with 3.37 mg/g and 2.64 mg/g respectively. This experimental results show that the agricultural wastes can be utilized as biosorbent for ammonia nitrogen removal. The effect of initial ammonia nitrogen concentration, pH and stirring rate on the adsorption process were studied in batch experiment. The adsorption capacity reached maximum value at pH 7 with initial concentration of 500 mg/L and the removal rate decreased as stirring rate was applied.