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Experimental Results of Conversion of Oil Palm Trunks and Cocoa Wood to Glucose

H.H. Yeoh, Qasem M. Ramadan, K.O. Lim

Abstract

Large quantities of lignocellulosic biowastes are produced by oil palm and cocoa plantations every year. As such a project was initiated to study the feasibility of converting oil palm trunks (OPT) and cocoa wood into glucose which can then be used to produce ethanol, and liquid fuel. The project is divided into three parts. In the first part, the OPT were hydrolyzed using different concentrations of sulphuric acid. Maximum glucose yield was found at a hydrolyzing acid concentration of about 1.7%. By using this optimum acid concentration, the second part of this project investigated the distribution of potential glucose yield as a function of position along the OPT. It was found that glucose yield was higher in the outer sections and lower in the inner sections. However, differences in glucose yield along the axis of the trunk are not pronounced except maybe towards the very top part of the trunk. The average glucose yield of OPT was found to be about 25%, based on even dried weight. The potential of converting cocoa wood into glucose was also studied. The cocoa wood was hydrolyzed using different concentrations of sulphuric acid, and the optimum glucose yield was also found at an acid concentration of around 1.7%.

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