

Apipol Rienthong 2014: Processing of Palm Trunk by the Blasting Hydrothermal Conversion System (BHCS). Master of Engineering (Mechanical Engineering), Major Field: Mechanical Engineering, Department of Mechanical Engineering. Thesis Advisor: Assistant Professor Wichai Siwakosit, Ph.D. 57 pages.

The purposes of this research are to study the conversion of palm trunk by the blasting hydrothermal conversion system (BHCS) and study the changes of nutrient properties of the respective products. The operations of BHCS have been undertaken at various temperatures and periods which are 160° and 30 minutes, 180° and 20 minutes, 200° and 10 minutes, and 210° and 5 minutes.

The results have indicated that the products from BHCS experiments are suitable as raw materials of the organic fertilizer production. This would reduce the pre-treatment time for the raw materials from approximately 4 months to just 20 minutes of BHCS treatment. Also, the changes of nutrient properties of the processed materials indicate that the organic carbon content would increase with increasing experimental temperature, from 41.3% by dry weight before treatment to the maximum value of 52.78% by dry weight, treated at 210° and 5 minutes. Nitrogen, phosphorus and potassium contents would be reduced by BHCS. The utility cost of each experiment would be 30 baht, approximately.

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Thesis Advisor's signature