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THIOSSAPON SUNGAYUTH: THE COMPARATIVE STUDY OF APPROPRIATE VALUE-ADDED TECHNOLOGY OF RESIDUE SAWDUST. THESIS ADVISOR: SAYAM AROONSRIMORAKOT M.Sc., CHUMPORN YUWAREE M.Sc., KONGDEJ TANKAYA M.Sc., KRAICHART TANTAKARNARPA M.Sc. 138 p. ISBN 974-663-754-1

This research study examined use of waste materials from wood industries. The experiment sought to use sawdust to improve the production of Joss Sticks, Mushroom Cultures and Dense Briquette Fuel and to compare the beneficial economics. The static value used was ANOVA, analysed by using SPSSX. The experiment was during August to September 1999. The places where the experiment was led were at Pomsriayutthaya Joss Stick Factory Phranakomsriayutthaya; province; at Banaranyik mushroom culture garden center Nakhonprathom; province; at the dense briquette fuel production sites at Thailand Institute of Scientific and Technological Research Bangkok and the Charcoal Research Center Saraburi; province.

The result of this research indicated that the Joss Sticks produced from rubber trees, after examine the time during burning was not different from the general Joss Stick production. The mushroom cultures production can be produced by using sawdust from rubber trees. The result after testing the growth of every mushroom fiber was that it was like the fiber of mushroom from the general mushroom cultures production. The dense briquette fuel production can be produced by using sawdust from rubber trees. The result of quality analysis of dense briquette fuel had a density of 1.295 kg./m^3 . The compression strength was $0.045 \text{ N/mm.}^2/\text{length } 1 \text{ mm}$. The quality analysis result of fuel showed volatile matters 18.7%, Fixed carbon 77.3%, ash content 4.0%, calorific value 7,450 k.cal/kg. A comparison of beneficial economics of producing Joss Sticks and mushroom cultures showed beneficial economics especially Joss Sticks revealed a maximum profit. The producing of dense briquette fuel proved economically unprofitable.

A comparison of value-added residual sawdust using appropriate technology indicated that producing Joss Sticks and Mushroom Cultures are appropriate methods for using waste matter. Using value-added technology with residual sawdust can be a beneficial trend for making decisions about occupation investments. However, there are another factors to consider such as power sources, marketing and experience.