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# EVALUATION OF DIFFERENT TYPES OF RICE FLOUR MILLING MACHINERY FOR THEIR PERFORMANCE

by

**D.M.S.P Bandara**

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This thesis was submitted to the Department of Mechanical Engineering of the University of Moratuwa in partial fulfilment of the requirements for the Degree of Master of Engineering in Manufacturing Systems Engineering

**Department of Mechanical Engineering  
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July 2006**

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**DECLARATION**

This Dissertation paper contains no material which has been accepted for the award of any other degree or diploma in any University or equivalent institution in Sri Lanka or abroad, and that to the best of my knowledge and belief, contains no material previously published or written by any other person, except where due reference is made in the text of this Dissertation.

I carried out the work described in this Dissertation under the supervision of  
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# THE EVALUATION OF DIFFERENT TYPES OF RICE FLOUR MILLING MACHINERY FOR THEIR PERFORMANCE

## ABSTRACT

A study was conducted to evaluate the performance of four types of rice flour milling machinery currently used in Sri Lanka namely, pin (disk) mill, plate mill, roller mill and hammer mill. The machines were evaluated for their performance with a view to recommending the suitable machinery or machinery combination for the Sri Lankan rice flour milling industry. Their performances were evaluated in terms of particle size obtained after milling, temperature increase during milling, moisture content of milled rice flour, string continuity on extrusion and cost of production.

The pin mill performed best as a single machine among the four types of rice flour milling machinery. However, the particle size of rice flour obtained was 300 $\mu$ m, which is inadequate for the preparation of extruded products. A combination of three passes through the pin mill produce a particle size of 212 $\mu$ m and the flour was suitable for extruded products after preparation of dough with warm water at 60 °C. The temperature increase during milling, the moisture content of milled rice milling and cost of production per kg of rice flour by this combination are 56.3<sup>0</sup>C, 11.7% and LKR.2.57 respectively. The study also showed that rice flour produced by a combination of pin (two passes) and plate mill (single pass) is suitable for extruded products after preparation of dough with water at ambient temperature as well as warm water at temperature 60 °C. The temperature increase during milling, moisture content of milled rice flour and cost of production per 1kg of rice flour by this combination are 59.5<sup>0</sup>C, 12.3% and LKR 2.84 respectively.

## Acknowledgement

I am deeply grateful to Dr. K.B Palipane, Director, and Institute of Post Harvest Technology for providing me the opportunity to carry out my research study at the Institute of Post Harvest Technology and guided me as a supervisor and providing various guidance to make my research study success.

I extend my special thanks to Eng. T.M.R Dissanayake, who supported me in every aspect to carryout the research study successfully.

I take this opportunity to thank Mr. M.D Fernando, Deputy Director, Eng. D.P Senanayake, Senior Mechanical Engineer, Eng. H.M.A.P Rathnayake Acting Senior Mechanical Eengineer and Eng. M.A.S Upul Kumara of the Institute of Post Harvest Technology for encouraging and supporting me during the work.

I am also grateful to Dr. G.K Watugala, Dr. U.P Kahangamage of the Department of Mechanical Engineering and also Dr. H.S.C Perera of the Department of the Management of Technology, University of Moratuwa for giving fullest invaluable guidance to me in my research studies. And I am very much grateful to Mr. Himan Punchihewa as the Research Coordinator for his unfailing active assistance courtesy and kindness granted to my study.

I would like to thanks to Prof. H.P.M Gunasena, Dr. Thamari Thilakawardane and other staff members of the Council for Agricultural Research Policy for granting of funds to carry out the research studies.

My special thanks are due to Mr. Thilak Bandara, Director of Udaya Industries, Weligalle, and Mr. F.C.M Pieris, Director of Unitech Engineering, Kohuwala, for facilitating testing of hammer mill and for their invaluable help in setting up experiments.

I am very much grateful to Mr. Saman Rathnayake, Technical Assistant, Mr. R. T. De. Leema and Mr. Chaminda Kumara for assisting me in conducting experiments on rice flour-milling machinery throughout the research study.

I wish to keep on record my sincere appreciation to staff of Analysis Division of Industrial Technology Institute, Colombo 7, for their fullest support in submission of particle size analysis.

I would like to extend my warm and sincere thanks to Ms. Lasanthi Jayatunga and Ms. Ruwanka Rathnayake, Research Officers, for their genuine help in numerous ways during the research study.

I am also thankful to Mr. Ranjith Palipane, Lab Technician, Ms. Subashini Gunawardena, Laboratory Assistant and Ms. Padmini Herath for their invaluable help in setting up experiments during my research study and preparing various food products on tested rice flour.

My special thanks go to Dr. G.K. Watugala, Course Coordinator and the Asian Development Bank for awarding a scholarship to pursue Master Degree Studies at the University of Moratuwa.

Last but not least, I convey my heartfelt thanks to my loving husband, little daughter and my parents for their encouragement and support to finish this work.



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