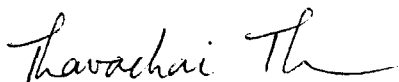


THESIS TITLE: DESIGN AND EVALUATION OF MACHINERY FOR EXTRACTING  
PINEAPPLE-LEAF FIBRES

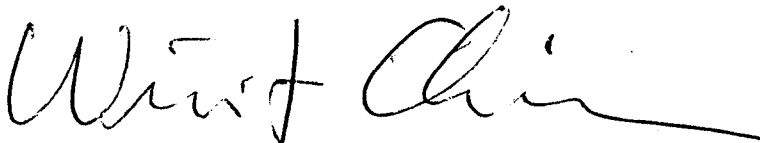
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### ABSTRACT

The objective of this study is to design, build and evaluate the performance of a machine for extracting pineapple-leaf fibres for the Pattavia variety. The machine prototype consists of a main frame, 1092 mm in length, 400 mm in width, and 570 mm in height, a fibre extractor fitted with multiple rectangular blades, a feeding unit and a power source of 1.5 kw (2 hp)

Three factors affecting the performance are studied, they are:

- 1) Leaf moisture content, 4 levels ranging from 87.3, 84.8, 81.7 and 76.5%(wb).
- 2) Number of blades, 3 levels ranging from 4, 8 and 16.
- 3) Linear speed of blade tip, 4 levels ranging from 21.6, 24.0, 26.4 and 28.9 m/s.

The indicators for the performance in the study are: rate of dry fibre extraction, dry fibre percentage, fibre strength and fibre fineness after degumming. The results from the performance testing of the machine on two sets of pineapple leaves with 87.3%(wb) and 80.19%(wb) moisture content respectively are as follows:-

	1st Testing	2nd Testing
-rate of dry fibre extraction (kg/h)	2.11	1.37
-dry fibre percentage (%)	2.44	2.39
-fibre strength (gm/tex)	25.89	22.99
-fibre fineness (m/gm)	33.97	32.15

The test results of the study suggest the following recommendations for the use of the machine:-

- 1) Extracting should be done within 2 days after harvest, which gives the optimum capacity, quantity and quality of dry fibres.
- 2) Number of blades and linear speed of blade tip give no significant difference for fibre strength and fibre fineness.
- 3) The optimum number of blades should be 8.
- 4) Linear speed of blade tip should be 26.4-28.9 m/s