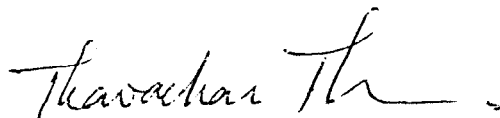


THESIS TITLE : THE STUDY ON THE IMPROVEMENT OF A SEMI-AUTOMATIC
CASHEW NUT SHELLER

AUTHOR : MR. SUCHART NGAECHAREONKUL

THESIS ADVISORY COMMITTEE



Chairman

(Associate Professor Thavachai Thivavarnvongs)



(Associate Professor Winit Chinsuwan, Ph.D.)



(Assistant Professor Somnuk Chusilp)

Abstract

The objective of this study is to modify the semi-automatic cashew nut sheller and compare its performance with the original AE (KKU)A1 semi-automatic sheller. Five factors effecting the performances are studied :-

1. Feeding rate (nuts/min.)
2. Feeding efficiency (%)
3. Shelling efficiency (%)
4. Whole kernel recovery (%)
5. Rate of kernel extraction from shell (nuts/min.)

The results of modification of the semi-automatic sheller include the following:-

1. Redesign of the main driving mechanism so that the nut conveying plate has 17.5% increase in the interval stopping time for nut feeding. The mechanism is expected to have higher reliability longer durability and reduced number of machine parts.

2. Redesign of the nut clamping mechanism which will give greater accuracy for the positioning of the nut while shelling, by changing the angular movement of the clamp to linear movement which will allow better accuracy for varying thickness of the nuts.

3. Modification of the cutting/twisting blades mechanism by changing from circular shaft to square shaft and modifying the original mechanism to the pressing of the upper blade and lifting of lower blade so that the lower blade mechanism is reduced from 3 sets to 1 set.

4. Redesign of the shelled nut retrieving mechanism so that each shelled nut can leave the conveying plate and be collected in a receptable efficiently.

The results from the testing which compares the performances of the original and the improved shellers indicate the following:-

1. The improved sheller gives higher feeding rate in the range 27-34 % and higher feeding efficiency in the range 16-19 %.

2. The improved sheller gives shelling efficiency of 96.26 % while the original sheller gives 86.84 %.

3. The improved sheller gives an overall whole kernel recovery of 87.38% while the AE(KKU)A1 sheller gives 50.20%.

4. The improved sheller gives a rate of kernel extraction from shell of 14.03 nuts/min while the original sheller gives 9.51 nuts/min.