

## **DEVELOPMENT AND EVALUATION OF COCONUT DEHUSKING MACHINE FOR SMALL AND MEDIUM SCALE FARM HOLDERS**

**S.D.S. Piyathissa and P.D. Kahandage**

*Department of Agricultural Engineering and Soil Science, Faculty of Agriculture,  
Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka*

Coconut (*Cocos nucifera* L.) is a perennial tree crop which has per capita consumption of 120 nuts/year in Sri Lanka. Nut is the economically most important part in coconut palm. Fruit has to be dehusked before any production process and there is no any mean of mechanization in Sri Lanka other than the manual coconut dehusking. It has become a major problem in coconut industry due to the existing method being laborious, dangerous and expensive. This study was conducted to introduce an efficient and affordable mechanical method for coconut dehusking. Main components of the dehusking machine were sets of blades and blade operating system, operating lever system and adjustable fruit holder. The most salient feature of this machine is detaching the husk into four pieces while the soft eye covering part was remaining. Machine weighs 65 kg and the total cost of production was Rs.13,200. The performance of the dehusking machine was evaluated separately using one and two operators and it was also compared with mostly practiced manual dehusking method (dehusking with iron spike). According to the evaluation results analyzed by one way Analysis of Variance, there was a significant difference ( $p>0.05$ ) between the machine with two operators and the manual method but no significant difference was observed between the machine with one operator and the manual method. Actual field capacities of the machine with one operator, two operators and manual method were 69 nuts/h, 135 nuts/h and 78 nuts/h, respectively. Theoretical field capacities of the machine with one operator, two operators and manual method were 107 nuts/h, 164 nuts/h and 105 nuts/h, respectively. Field efficiencies of the machine with one operator, two operators and manual method were 64.5%, 82% and 74% respectively. Therefore, the coconut dehusking machine could be effectively used with two operators for higher field capacity and field efficiency.

**Keywords:** Coconut production, Dehusking, Field capacity