

REDUCING THE TIME OF COIR RETTING BY CHANGING THE CONDITIONS OF MICROBIAL ENVIRONMENT

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University

In partial fulfillment of the requirements for the award of the
Degree of Bachelor of Science in Palm & Latex Technology and Value
Addition

By
**PUNCHIHEWAGE THEJA NAYANAKANTHI
WIMALASENA**

**Faculty of Animal Science and Export Agriculture
Uva Wellassa University**

2013

ABSTRACT

Sri Lanka is the largest coir exporter in the world and Sri Lankan coir has a great market demand in the coir market. But today Sri Lanka has faced difficulties because of the low productivity compared with other competitor countries. The coconut husk which is a fibrous material that covers the fruit of *Cocos nucifera* is the raw material for extracting coir fiber. The retting process is responsible for the separation of bristle fiber from the husk and it undergoes two distinguished physical and biological changes. This study was done to reduce the retting time of coir by changing the microbial environment of retting tank and to increase the productivity of Sri Lankan bristle fiber.

The experiment procedure was done in three stages as preparation of nutrient media, changing the pH value of retting water and supplying of aeration to the retting tank. There were six treatment combinations and the control. Six increasing retting days were applied as 7, 14, 21, 28, 35 and 42 days. At each week microbial studies and coir quality analyzing were done. Best quality coir sample was analyzed statistically by grouping comparison in Tukey method.

Treatment combination T5 (50% of nutrient media, 3L/min air volume with pH9) and T6 (75% of nutrient media, 3L/min air volume with pH9) were reduced retting time by giving relatively higher best results for average breaking load and elongation at break within 14 days of coir retting. And also above two treatments were given relatively higher best results for physical requirements of bristle fiber. Weighted average tensile strength, fineness, size distribution of coir, average length distribution, and average diameter distribution of coir were analyzed as the physical requirements of coir. pH variation of retting water of each sample in weekly intervals and isolation of bacteria were also done. Treatment combination, T3 (50% of nutrient media, 3L/min air volume with pH7), T4 (75% of nutrient media, 3L/min air volume with pH7), T5 (50% of nutrient media, 3L/min air volume with pH9) and T6 (75% of nutrient media, 3L/min air volume with pH9) were given relatively higher results for average total colony count and colony forming units within 14 days of coir retting.

Key words: Coir retting, Microbial environment, Physical requirements, Retting time, CFU