

A COMPREHENSIVE STUDY ON DRYING CHARACTERISTICS OF COCONUT IN SOLAR HYBRID DRYING TECHNIQUE

T.Thanaraj¹, D. A. N.Dharmasena², Samarajeewa.U³

¹ Division of Agric Engineering, Faculty of Agriculture, Eastern University, Sri Lanka.

² Dept. of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya.

³ Dept. of Food Science and Technology, Faculty of Agriculture, University of Peradeniya.

ABSTRACT

Copra is one of the major traditional products processed from coconuts. Traditionally drying is done either using a kiln or under direct sun to reduce moisture content of the coconut meat. Different components of the solar hybrid dryer were evaluated separately and then the drying system was tested for its performances.

Coconuts were split open and dried under direct sun on the first day and then loaded in the drying chamber for further drying. At the end of 36 h of the continuous drying shell were removed from the coconut cups. Drying was lasted for 71 h to reduce the moisture content of coconut to 7 %.

Drying temperature of about 60 °C was maintained in the drying chamber throughout the drying period. Relative humidity was high in the drying chamber at the beginning of the drying process then it reduced to around 30% at the end of the drying process. The average solar insolation of about 668 W/m² was recorded during the testing period. The copra was graded as 73% white copra, 21% Milling Ordinary Grade II (M.O.GII) copra and 6% M.O.GIII copra. The overall thermal efficiency of 10% was recorded.

Key Words: coconut, copra, drying, drying technique, solar hybrid, solar insolation.