

KSUC-OI-012

Experimental investigation of the performance of a solar tunnel dryer for drying chilli in Thailand

Pisarn Sombatwong*, Orathai Jumpadai and Natawut Ponsri

Department of Industrial management technology, Faculty of liberal arts and sciences, Sisaket Rajabhat University, Sisaket, 33000, Thailand

*Corresponding author: pisanme@hotmail.com

Abstract

To investigate the performance of chilli drying using the solar tunnel dryer comparing to open sun drying method, a direct mode type forced convection solar tunnel dryer was used to dry hot red chillies under tropical weather conditions of Thailand. It is covered with transparent glass. The base of the dryer is a metal sheet with an area of 2x6 m². 5 AC fans were used to ventilate the air in the dryer. The dryer was installed at Sisaket, Thailand. Three batches of chilli were dried in the dryer comparing to open sun drying. It was found that fifty kilograms of chilli with the initial moisture content of 68-80 (wb) were dried within 3-5 days while the open sun-dried needed 7-9 days, depending on the initial moisture content and the weather condition. The chilli dried in the dryer was completely protected from insects, animals, and rain. In addition, good quality of chilli was obtained.

Keywords: Solar tunnel dryer, Chilli drying, Open sun, moisture content, Direct forced dryer