

Semi empirical modelling for thin sliced potato drying under active-mode indirect solar dryer

ABSTRACT

This paper aims to select the best semi-empirical model for thinly sliced potato drying under active mode indirect solar dryer with variations of the exhaust air velocities. The exhaust air velocities to remove the vaporized moisture inside the drying chamber were set at 0.2m/s, 0.4m/s, 0.6m/s, and 0.8m/s. The solar intensity, temperature and relative humidity were measured. The Sigmaplot software was used to select the best thin layer drying model for sliced potatoes drying under indirect solar dryer assisted with a solar accumulator and exhaust fan. From the result, drying at 0.2m/s shows a significant drying performance with reduced mass percentages at 69%. The lowest the exhaust air velocity, the better reduction of the mass percentages and the higher the evaporation rate. Consequently, a Rational four (4) parameter was selected as the best of all the drying models, according to r^2 , RSME, and x^2 . This study gives a useful understanding of the significant effect of the variations of the exhaust air velocities on the drying performance.