

Title Modelling of far-infrared irradiation in paddy drying process
Author Naret Meeso, Adisak Nathakaranakule, Thanid Madhiyanon and Somchart Soponronnarit
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Abstract

The set of coupled heat and mass transfer equations are developed to predict the effect of far-infrared irradiation in a series paddy drying process, comprising fluidized bed drying, transport of paddy, far-infrared irradiation, tempering and ambient air ventilation. Two layers inside a paddy grain, i.e. a penetrating layer and a conductive layer, were introduced in the development. Comparison results showed that the model predicted results agreed well with the experiments within the maximum differences in the average paddy moisture content and temperature of 2.5% d.b. and 5 °C, respectively. Furthermore, the model was capable of reasonably predicting the temperature and moisture distributions inside a paddy grain.