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Res. Agr. Eng.

**Amiri Chayjan R.,
Salari K., Shadidi B.:**

Modeling some drying

characteristics of garlic sheets under semi fluidized and fluidized bed conditions

Res. Agr. Eng., 58 (2012): 73-82

Thin layer drying properties of high moisture garlic sheets under semi fluidized and fluidized bed conditions with high initial moisture content (about 154.26% d.b.) were studied. Air temperatures of 50, 60, 70 and 80° C were applied to garlic samples. Among the applied models, Page model was the best to predict the thin layer drying behavior of garlic sheets. Using this model, correlation coefficient (R^2) was high for all drying cases. The computed values of D_{eff} were between 3.38×10^{-10} and 2.54×10^{-9} m²/s during the falling rate drying. Values of D_{eff} for garlic sheets were also increased with increasing in input air temperature. Activation energy values were varied between 51.32 and 60.58 kJ/mol for 50 to

80° C, respectively. The specific energy consumption (*SEC*) for garlic specimens was placed in the range of 0.316×10^6 and 0.979×10^6 kJ/kg from 50 to 80° C, respectively. An increase in air temperature caused decrease in *SEC* value. Application of semi fluidized bed convective drying with temperature between 50 and 60° C was suitable to produce dried garlic.

Keywords:

energy; diffusivity; garlic; moisture ratio;
Page model

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