

Title Thin Layer Drying of Amaranth Seeds
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Abstract

An experimental dryer was constructed to carry out thin layer drying studies of amaranth seeds (*Amaranthus cruentus*) in the temperature range of 30–60 °C and relative humidity range of 0.30–0.60 dec. Air velocity was held at 0.7 m s⁻¹. Average initial grain moisture contents of 0.15, 0.20, 0.25 and 0.32 d.b. were considered. The equilibrium moisture content was experimentally obtained and the modified Henderson equation was used to fit the experimental data. The estimated parameters of the sorption isotherm A , B and C were 0.947 °C⁻¹, 15.731 °C and 1.736, respectively. Applying the Clapeyron-sorption isotherm model, the heat of vapourisation was also derived. Four mathematical thin layer equations, Lewis, Henderson and Pabis, Page and Thompson models, were used to fit the drying data. Goodness of fit by these models was based on comparing the coefficient of determination r^2 , standard error of the estimate (SEE), mean relative deviation (MRD) and plot of residual between the observed and predicted variable. The Page equation was the most adequate in describing thin layer drying tests. Model parameters k_p and n were correlated with temperature, relative humidity and initial moisture content. For the drying conditions considered in this work, the developed thin layer equation predicts satisfactorily the drying of amaranth.