Abstract

Thin layer drying studies of amaranth (*Amaranthus cruentus*) seeds were carried out under open sun and natural convection solar tent dryer. The ambient temperature and relative humidity ranged from 22.6-30.4°C and 25-52%, respectively, while the inside temperature and relative humidity in the solar drier ranged from 31.2-54.7°C and 22-34%, respectively. Fresh amaranth seeds with the average moisture content of 64% (dry basis) were dried under both conditions for seven hours to the final moisture content of $\sim$ 10% (dry basis). A non-linear regression analysis was used to develop drying models for amaranth seeds. The models were compared using the coefficient of determination (R^2), root mean square error (RMSE) and the reduced chi-square (χ^2) in order to determine the one that best represented thin layer drying characteristics of amaranth seeds. The results show that the Page model satisfactorily described the drying of amaranth seeds with R^2 of 0.9980, χ^2 of 0.00016 and RMSE of 0.01175 for bottom layer and R^2 of 0.9996, χ^2 of 0.00003 and RMSE of 0.00550 for top layer of the drying rack. Similarly, the Page model attained R^2 of 0.9965, χ^2 of 0.00027 and RMSE of 0.01540 for the open sun. This shows that there was a good agreement between the predicted and actual moisture changes in drying of amaranth seeds under both conditions.