Mathematical modeling and color quality of thin layer drying of Phlai (*Zingiber montanum (Koenig) Link ex A. Dietr.*) by solar dryer combined with intermittent infrared radiation

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Abstract. In this study, phlai slices were dried with three production drying temperatures (50, 60 and 70°C) three lavels of infrared power (500, 1000 and 1500 W) and 0.4 m/s air velocity in a solar dryer combined with intermittent infrared radiation. Distance from infrared source was 20 cm. The initial moisture content of phlai was about 600% (d.b.) and was reduced to the final moisture content of 13% (d.b.). Thirteen mathematical models available in literature were compared using their coefficient of determination (R^2) and Chi-square (χ^2) to estimate suitable drying curves. Interpretation of statistical results, Logarithmic model being chosen, this model was considered being best fitted over other models, which were compared between the observed and predicted moisture ratios, because it gave the lowest χ^2 and highest R^2 values. For color quality, it was found that total color difference (ΔE^*) of phlai was changed with the drying temperature and infrared radiation power.