Abstract

The purpose of this paper is to present numerical solutions of a diffusion model by the orthogonal collocation method applied to soybean seeds when drying, when the effective diffusivity is moisture content dependent. The model used takes into account both internal and external mass transfer resistances. The simulated results were compared with experimental data of soybean drying in a thin layer. The results showed that the convective mass transfer resistance was negligible, for the experimental conditions. That being so, the hypothesis that the moisture at the solid surface instantly attains the equilibrium moisture of the grain is adequate for this case. A functional dependency of the effective diffusivity with the solid's moisture and with temperature was determined in this work.