MODELLING OF THE ECOLOGICAL DRYING PROCESS OF TOMATOES BY THE NON-CONVENTIONAL DESIGN OF EXPERIMENTS METHOD

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ABSTRACT
The preservation of perishable foods through their transformation is always a major challenge for producers. Several methods are applied for this purpose, and progresses are recorded by improving these processes or by finding new means. In our work, the method of dehydration and natural drying of tomatoes using a natural dryer with indirect solar energy with air circulation by extractor is used to describe and then predict the process of obtaining the finished product in the form of tiny dried fragments or powder. This is the novelty of this research, which uses the unconventional design of experiments. This consists of finding a mathematical model based on the interaction of 3 parameters that interact with each other, namely the trays temperature, the drying speed and the relative humidity in the solar dryer. The interference of the values of one of these 3 parameters on the 2 other parameters acts directly on the result of the drying process. The matrix treatment of the data of several carried out experiments in the resolution of 13 equations gives us the required responses and permits us to draw the graphs, the contours and the responses surfaces that access us to a more detailed analysis.