

Experimental Study of Solar Drying of Verbena in Different Dryers

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Abstract : One of the most crucial ways to combat food insecurity is to minimize crop losses; food drying is one of the most organic, efficient, low-cost, and energy-saving food preservation methods. In this regard, we undertake in this study an experimental evaluation and analysis of the thermal performance of different natural convection drying systems: a solar greenhouse dryer, an indirect solar dryer with a single compartment, and a solar dryer with two compartments. These systems have been implemented at the Solar Energy and Environment Laboratory of Mohammed V University (Morocco). The objective of this work is to study the feasibility of converting a solar greenhouse into a solar dryer for use during the summer. On the other hand, to study the thermal performances of this greenhouse dryer by comparing it with other solar dryers. The experimental study showed that the drying of verbena leaves took 6 hours in the indirect dryer 1, 3 hours in the indirect dryer, and 2 and 4 hours in the greenhouse dryer, but the amortization period of the solar greenhouse dryer is lower than the other two solar dryers. The results of this study provide key information on the implementation and performance of these systems for drying food of great global interest.

Keywords : indirect solar dryer, solar energy, agricultural greenhouse, green energy

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