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Modeling Drying Kinetics of Dominga Grapes

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OBJECTIVES

Influence of air temperature and velocity on drying kinetics of grapes

Mathematical modeling of drying kinetics

MATERIALS & METHODS

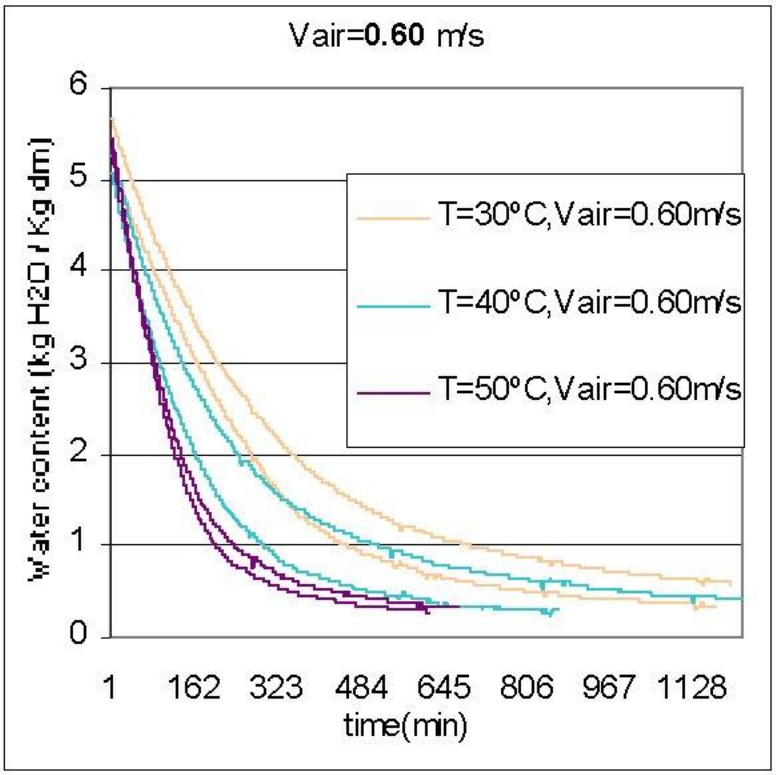
RESULTS

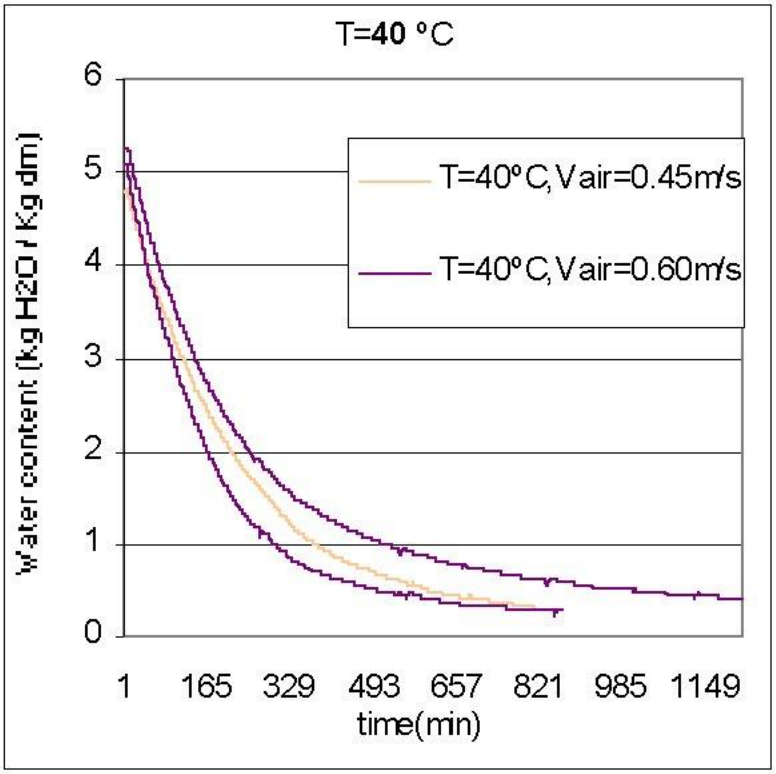
- A single falling-rate behavior was observed.

- Air velocity in the tested range, has no significant effect. ⟷ internal diffusion

- The air temperature effect follows the Arrhenius law:

$$K = Ko \exp\left[-\frac{Ea}{R}\left(\frac{1}{T} - \frac{1}{To}\right)\right]$$





A one-step non-linear regression (Arabshahi and Lund), was performed simultaneously to all the data:

Activation Energy = 31.8 ± 0.3kJ/mol

Mean equilibrium moisture content = 0.338±0.007 kg water/kg dry mater