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## An empiric equation for the latent heat of vaporization of moisture in bananas during its isothermal drying

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### Author(s)

Wilton Pereira da Silva, Cleide Maria Diniz Pereira da Silva e Silva, Fernando José de Almeida Gama, Josivanda Palmeira Gomes

### ABSTRACT

In order to determine the energy needed to artificially dry a product, the latent heat of vaporization of moisture in the product,  $h_{fg}$ , must be known. Generally, the expressions for  $h_{fg}$  reported in the literature are of the form  $h_{fg} = h(T)f(M)$ , where  $h(T)$  is the latent heat of vaporization of free water, and  $f(M)$  is a function of the equilibrium moisture content,  $M$ . But expressions of this type contain a simplification because, in this case, the ratio  $h_{fg}/h$  would only depend to the moisture content. In this article a more general expression for the latent heat of vaporization, namely  $h_{fg} = g(M,T)$ , is used to determine  $h_{fg}$  for banana. To this end, a computer program was developed which fits automatically about 500 functions, with one or two independent variables, imbedded in its library to experimental data. The program uses nonlinear regression, and classifies the best functions according to the least reduced chi-square. A set of executed statistical tests shows that the generalized expression used in this work given by  $h_{fg} = g(M,T)$  produces better results of  $h_{fg}$  for bananas than other equations found in the literature.

### KEYWORDS

Energy; Agricultural Products; Dried Banana; Heat and Mass Transfer

### Cite this paper

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