Title	Determination of parameters for an alfalfa rotary dryer
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Abstract

All variables --wet alfalfa input capacity, dry alfalfa output capacity, alfalfa stem length, rotary speed, heated air temperature, air flow velocity and flight amount were integrated and derived into four oterms based on the dimensional homogeneity theorem. An improved similitude theorem was used to design an experiment program for the abovementioned drying. A set of component equations involving the drying parameters was derived from an improved Murphy's theorem, and the most of its correlation coefficients are higher than 0.99. The validation results show that most of the relative errors of Pi terms are lower than 10% and are acceptable in engineering. The experimental results justified that theorem of following advantages: fewer numbers of tests, less strict requirements on the variable's intervals, and higher precision of prediction these models may be used to study parameter interaction effects on the conveyor performance, which may be useful in the design and selection of rotary dryers for drying alfalfa hay.