Title The impact of biological variation on postharvest behaviour of Belgian endive: The case of multiple stochastic variables

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Abstract

Data generated in postharvest research is often characterised by its large biological variation. This variation generally obscures the behaviour of interest, complicating both the statistical and conceptual interpretation of the data. This paper outlines a general model approach of how to account for the propagation of biological variation when analysing experimental postharvest data. Previous work on the case of a single stochastic variable was extended to the situation of two stochastic variables. The proposed technique was applied to experimental data on stem growth of Belgian endive. By explicitly using the information on biological variation, the number of model parameters to be estimated (only two) did not change while the fitness of the model to describe the experimental data was improved tremendously as compared to the traditional fitting of a model without stochastic variables.

The model could describe the complex behaviour of a batch showing propagation of biological variation in stem length of Belgian endive as a function of time and temperature during postharvest storage. Differences between batches could not be related directly to either grower, harvest or culture type but probably depends on a complex interaction with preharvest factors.