

Abstract:

The food that we eat is uniform neither in shape or appearance nor in internal composition or content. Since technology became increasingly important, the presence of biological variance in our food became more and more of a nuisance. Techniques and procedures (statistical, technical) were developed. The most widely used are sorting or grading on large-scale operations. Statistical rules were developed on the sampling size to obtain a reliable mean value. Experimental design strategies were developed for efficient research. All the techniques used are rather empirical and only loosely connected to the theoretical and fundamental knowledge we do have.

An effort is made to approach biological variance from a new perspective. The nature of biological variance is traced back to its origin in the processes of production and conversion, primarily driven by the "random" differences in climate and soil. By modelling the dynamics on the level of the individual units that constitutes a batch, rather than modelling the mean value for the batch itself, more fundamental models can be developed. These more fundamental models are generic in nature and describe changes in product properties for all kinds of circumstances like growing area, seasonal effects, harvest maturity and storage temperature.