

Reduction of repeatability error for analysis of variance-Simultaneous Component Analysis (REP-ASCA): Application to NIR spectroscopy

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For multivariate data associated with an experimental design, Analysis of Variance - Simultaneous Component Analysis (ASCA) is the most commonly used. However, when faced with measurements that lack repeatability, results of ASCA can then be misinterpreted.

A method named Reduction of the error of repeatability-Analysis of variance-Simultaneous Component Analysis (REP-ASCA) has been developed to address this issue. This approach proposes to adapt a protocol consisting of adding repeated measures to the measurements for the analysis of variance. The methodology of REP-ASCA will be detailed and applied to two case studies: NIR spectroscopy of coffee data and VIS-NIR spectroscopy for maize for plant breeding.