

Canonical variate analysis for two-way classification applied to a fertilization experiment with winter triticale

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Abstract

Canonical variate analysis, a technique applied in multilinear modelling, searches for transformations of the original variables into an orthogonal space in which the between-group variance is maximized. Our study shows how, in a linear model subject to two-way classification, singular value decomposition [2] can be combined with linear combinations [1] of the original variables. Transformations into the same orthogonal space, on the one hand, reveal the relationships between the variables and the experimental objects and, on the other hand, show the dispersion of the experimental units.

Canonical variate analysis was applied to analyze winter triticale yield-related data collected over several years under different fertilizer treatments [3]. The analyzed data consist of the yield of winter triticale, micronutrient uptake, and biomass assessed based on plants collected during the heading stage. The application of canonical variate analysis to the data allows the identification of relationships between parameters of winter triticale and experimental factors. This leads to a much deeper and broader interpretation of the agricultural experimental results.

Keywords

Canonical variate analysis, Singular value decomposition, Linear combination, Two-way classification, Winter triticale.

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