CLUSTERING POPULATIONS BY

MIXED LINEAR MODELS

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ABSTRACT

Two mixed linear models are proposed for grouping populations by a dissimilarity coefficent which has two parameters for squared difference of marginal mean and variance component of interaction. Cluster trees can be constructed by the mixed linear model approaches for experimental data with sampling errors within populations or with some missing values. Unweighted pair – group method (UPGM) is suggested as fusion method. Sampling variances of estimated dissimilarity coefficient can be obtained by the jackknife procedure. A one – tail t – test is applicable for detecting significance of dissimilarity of populaions within specific group. Unbiasedness and efficiency for estimation of dissimilarity coefficients are proved by Monte Carolo simulations. Worked example from cotton yield data is given for demonstration of the use of these cluster methods.

Key Words: Cluster method, Mixed linear models, Monte carlo simulation, Genotype×environment interaction.

coefficient and its two components. The observed sampling variances for estimates are also much larger than those obtained by UPGM method.

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