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Nota di contenuto	Cover; Title Page; Copyright; Contents; Preface; Chapter 1 The need for more than one random-effect term when fitting a regression line; 1.1 A data set with several observations of variable Y at each value of variable X; 1.2 Simple regression analysis: Use of the software GenStat to perform the analysis; 1.3 Regression analysis on the group means; 1.4 A regression model with a term for the groups; 1.5 Construction of the appropriate F test for the significance of the explanatory variable when groups are present; 1.6 The decision to specify a model term as random: A mixed model 1.7 Comparison of the tests in a mixed model with a test of lack of fit 1.8 The use of Residual Maximum Likelihood (REML) to fit the mixed model; 1.9 Equivalence of the different analyses when the number of observations per group is constant; 1.10 Testing the assumptions of the analyses: Inspection of the residual values; 1.11 Use of the software R to perform the analyses; 1.12 Use of the software SAS to perform the analyses; 1.13 Fitting a mixed model using GenStat's Graphical User Interface (GUI); 1.14 Summary; 1.15 Exercises; References

Chapter 2 The need for more than one random-effect term in a designed experiment 2.1 The split plot design: A design with more than one random-effect term; 2.2 The analysis of variance of the split plot design: A random-effect term for the main plots; 2.3 Consequences of failure to recognize the main plots when analysing the split plot design; 2.4 The use of mixed modelling to analyse the split plot design; 2.5 A more conservative alternative to the F and Wald statistics; 2.6 Justification for regarding block effects as random
2.7 Testing the assumptions of the analyses: Inspection of the residual values 2.8 Use of R to perform the analyses; 2.9 Use of SAS to perform the analyses; 2.10 Summary; 2.11 Exercises; References; Chapter 3 Estimation of the variances of random-effect terms; 3.1 The need to estimate variance components; 3.2 A hierarchical random-effects model for a three-stage assay process; 3.3 The relationship between variance components and stratum mean squares; 3.4 Estimation of the variance components in the hierarchical random-effects model; 3.5 Design of an optimum strategy for future sampling
3.6 Use of R to analyse the hierarchical three-stage assay process 3.7 Use of SAS to analyse the hierarchical three-stage assay process; 3.8 Genetic variation: A crop field trial with an unbalanced design; 3.9 Production of a balanced experimental design by `padding'' with missing values; 3.10 Specification of a treatment term as a random-effect term: The use of mixed-model analysis to analyse an unbalanced data set; 3.11 Comparison of a variance component estimate with its standard error; 3.12 An alternative significance test for variance components
3.13 Comparison among significance tests for variance components

Sommario/riassunto

This book first introduces the criterion of Restricted Maximum Likelihood (REML) for the fitting of a mixed model to data before illustrating how to apply mixed model analysis to a wide range of situations, how to estimate the variance due to each random-effect term in the model, and how to obtain and interpret Best Linear Unbiased Predictors (BLUPs) estimates of individual effects that take account of their random nature. It is intended to be an introductory guide to a relatively advanced specialised topic, and to convince the reader that mixed modelling is neither so specialised nor so d