

On combining information in a generally balanced nested block design

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Abstract

Nested block designs are quite often used in practice, particularly in agricultural experimentation. Their statistical properties have been considered in many papers, as reviewed by Bailey (1999). Of special interest are those nested block designs which satisfy the general balance property introduced by Nelder (1965) and discussed by several authors, by Bailey (1994) and by Bogacka and Mejza (1994) in particular.

The purpose of the present paper is to give explicit formulae for analyzing an experiment carried out in a nested block design having the general balance property of some desirable pattern. The results follow from a randomization-derived mixed model, decomposed into stratum submodels. Attention is confined here to the combined analysis allowing the information from different strata to be joined together, following Nelder (1968). The paper is essentially an extension of some results presented in Chapter 5 of Caliński and Kageyama (2000).

Keywords

Combined analysis, General balance property, Nested block design, Randomization-derived model, Stratum submodels.

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