

EXPERIMENTAL DESIGN AND ANALYSIS FOR USE IN TREE IMPROVEMENT

Williams, E.R. & Matheson, A.C.: Experimental Design and Analysis for Use in Tree Improvement. CSIRO Information Services, East Melbourne, 1994, 174 pages, ISBN 0-643-05555-X, price AUD 45.

This book is not very large in size but a great tool for many breeders, experimentators, and students. It was written as a set of courses being held on behalf of the Australian Centre for International Agricultural Research (ACIAR) and published within the CSIRO Information Services. The book emphasizes the practical issues faced in forest tree improvement trials. It is aimed at the preparation, design, analysis and interpretation of forestry trials, primarily for the introduction and improvement.

The book is based on the application of commercially available software packages for various activities involved in field and glasshouse trials. The packages discussed in detail are ALPHA+, for the design of randomization of trials; DATACHAIN, for the collection and pre-processing of data; and GENSTAT, for the analysis of results. The examples are well written, relevant and fully-worked. Most of them are relative to the mentioned software packages, and although, there are on the market numerous other (and in some cases more common) statistical packages, *e.g.*, SAS, BMDP, or SPSS, the examples could also be easily interpreted and applied by readers unfamiliar with the programmes.

The book comprises of 8 chapters, an appendix, a glossary and an index. The structure of the book follows the logical sequence to follow in designing and analyzing field trials.

The introductory chapters are aimed at the explanations of the principles of experimental designs, from simple ones up to factorial designs and split-plot designs.

The next chapter deals with the analyses across sites based

on complete and incomplete two-way tables, joint regressions with both complete and incomplete two-way tables.

Variance components and genetic concepts are the subject of the next chapter and the examples are aimed at progeny and provenance/progeny trials, multiple-tree plot experiments and mixed-effects models for incomplete block designs.

Incomplete block designs and generalized lattice designs are also dealt with in the next two chapters. The examples in these two chapters are mainly based on the application of the ALPHA+ programme.

The authors introduced a new language operating with numbers of procedures from the above mentioned statistical packages, which is explained in the last chapter discussing the syntax of DATACHAIN and GENSTAT. There are less formulas and more explanations and practical advice.

Finally, the booklet looks like a good "cook-book", equipped not only with some "tasty recipes" but is also with very nice in design and photos. Modern graphical layout improves the inner structure of each chapter. The reader has immediately a feeling of the examples written to demonstrate the computational procedures and statistical methods are aimed at living organisms.

The book is highly recommended for undergraduate and graduate students, tree breeders as a basic source of reading for design, establishment and evaluating of tree breeding experiments.

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