Book reviews

Selection Methods in Plant Breeding. Izak Bos and Peter Caligari. Chapman and Hall, London. 1995. Pp. 347. Price £59.00, hardback. ISBN 0 412 55330 9.

This book covers aspects of statistics, quantitative genetics and population genetics which are of importance to plant breeders. The subject matter is similar to that of *The Theory of Plant Breeding* by O. S. Mayo, but with a different style and with different priorities.

The book falls into three sections. The first seven chapters are on one and two locus theory, followed by six chapters on quantitative genetics. The final six chapters cover aspects of plant breeding not usually found in quantitative genetic textbooks with, for example, discussion of the size and shape of plots, optimum replicate number and allocompetition, grid and honeycomb selection and optimum plant density for selection. I found these later chapters the most interesting because the subject matter was the least familiar, and would have preferred these to be longer, and the earlier chapters to be more compact. The book also discusses other, more specific, plant breeding subjects such as genetic and cytoplasmic male sterility and autopolyploidy.

The text contains a large number of boxed notes and examples. These cover an extensive chronological, geographical and crop range, and were the best parts of the book for me. They are strongly focused on plant breeding problems, with most involving actual, rather than simulated, data taken from real crops. The main lesson I took away from these is how horribly messy anything associated with agriculture turns out to be. I particularly liked the reference to some 1973 Canadian work on the merits of visual selection, where the assistants were found to be more effective than the breeders. So much for the fabled 'breeders eye'. Of course this would never happen now, no-one can afford assistants any more!

There are some omissions. Although there is a chapter on optimum replicate number for yield trials, there is no discussion of optimum site or year numbers and the design of multi-stage selection procedures. However, it seems likely that this area will be covered in a forthcoming title in the same series. More surprisingly, there is little discussion of methodology for marker-assisted selection and the location of QTLs by the use of markers. Perhaps the authors are foresighted, and anticipate that such techniques will have as much bearing on plant breeding programmes constrained by a budget as quantum mechanics has on bridge building. This is not a view they put forward, I hasten to add.

The book would definitely benefit from a glossary of symbols. The use of symbols is consistent throughout the

book, and they are explained as they are introduced, but I found the book difficult to dip into, since one has to search back extensively to discover the meaning of many of the terms.

In addition to students learning the art, the practising plant breeder should also find this book worth reading.

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Genetics of Wood Production. Bruce J. Zobel and Jackson B. Jett. Springer-Verlag, Berlin. 1995. Pp. 340. Price £134.00, hardback. ISBN 9 783540 588412.

The title, *Genetics of Wood Production*, embodies the two components of successful production forestry to which Bruce Zobel has devoted his lengthy and productive career — genetic improvement and wood quality. *Genetics of Wood Production* is the fourth of his substantive texts addressing these issues, following *Applied Forest Tree Improvement*, with J. T. Talbert (1984); *Growing Exotic Forests*, with G. van Wyk and P. Stahl (1987); and, its predecessor in the Springer Series in Wood Science, *Wood Variation: Its Causes and Control*, with J. P. van Buijtenen (1989). Zobel is one of the founding fathers, and now elder statesmen, of industrial tree breeding; some 40 years ago, he initiated the pioneering and influential North Carolina State University-Industry Cooperative Tree Improvement Programme, with which he remains associated and of which J. B. Jett has acted as Director.

Genetics of Wood Production is essentially a literature review on a grand scale. It comprises four introductory chapters, four chapters focusing on various wood properties, and five concluding chapters emphasizing the exploitation of genetic variation in these properties by tree breeding programmes. The text includes numerous figures and tables, many of which contain a wealth of information — for example, Table 5.1 reports 52 estimates of narrow-sense heritability in eleven *Pinus* species, and Appendix Table 3.1 comments synoptically on 47 papers describing methods to determine wood density. Around 900 sources are cited, and there are comprehensive indices.

With Bruce Zobel's and J. B. Jett's credentials and experience, *Genetics of Wood Production* has an impeccable pedigree, and the subject is one of real importance