Theor Appl Genet (1987) 74:677–679



# Book reviews

**Cohort Software: CoStat, Statistical Software.** Berkeley, Calif: Cohort Software 1986. 220 pp., 11 figs., many tabs. $ 79.–.

The general information on this package mentions that CoStat is a collection of menu-driven statistical programs which makes commonly used statistical procedures available to microcomputer users at a reasonable price. In contrast to many other packages, scientific use of statistics prevails over business statistics. A review of such a package is different from a book review because there are so many aspects which need attention.

To start with – the manual: it is very clearly written and begins with a general description of the package, followed by a Tutorial, a Reference Guide, and a Program Description Section. This latter section contains a description and sample runs of each program as well as a reference to a statistical text. Most of the procedures and examples are described in the commonly used statistical texts *Biometry* (Sokal and Rohlf 1981) or *Agricultural Experimentation* (Little and Hills 1978).

CoStat differs from other packages like SAS, SPSS and Statistix because prior to analysis (even prior to data entry) the user is forced to specify the design of his experiment or observational study in statistical terms. This specification is crucial for the success in performing statistical analyses with CoStat. This characteristic makes the package very useful for courses in basic statistics and also for routine statistical analyses.

The many procedures in this package include ANOVA (1 to 3 factors), correlation analysis, descriptive statistics, editor, frequency analysis (histograms, 1-way tabulations, 2-way and 3-way cross tabulations), miscellaneous tests (e.g. F-test, G-test, t-tests, confidence limits), non-parametric tests (e.g. Kendall tau, Kruskal Wallis, Mann-Whitney U, Wilcoxon), plot (low resolution and high resolution graphics), regression (polynomial, periodic, multiple and stepwise multiple regressions, Student-Newman-Keuls test), and utilities (evaluation and integration of equations, computation of factorials, permutations and combinations, random numbers and statistical tables).

The support from Cohort statistics is good, as I experienced when I discovered a minor bug in the program, which led to erroneous results. Within two weeks I received a new version of the program. Some minor problems with the use of high resolution graphics and minor comments on the manual have been sent to Cohort statistics and I trust that future releases of the package will even be better than the version I tested.

My conclusion is that this package should be taken as an example to the many expensive packages. The results are correct and accurate, the package is user friendly and the manual is clear, even for inexperienced users of microcomputers. The price is so low that it can hardly prevent anyone from buying.

O. F. R. van Tongeren, Nieuwersluis

**Walker, J. M.; Gaastra, W.: Techniques on Molecular Biology, Vol. 2.** Beckenham (UK): Croom Helm 1987. 332 pp. £ 14.95.

This book will certainly be a valuable addition to the library of textbooks available in molecular biology as it provides detailed information concerning a number of molecular biological methods. As it contains a number of more or less independent chapters, the book has the disadvantage that a general theme is missing, however, in depth this book has more information than many of the recently published textbooks on molecular and cellular biological topics. In addition, it gives more background information than most manuals. It is a particularly good book for students and teachers: the information it presents is up-to-date and accompanied by relevant references for those that want to know all the details of a given method. The chapters on protein topics provide good information about basic methods for purification and synthesis in addition to the most important background information. Many readers will profit from the chapter on affinity chromatography since for both protein and nucleic acid research, and in general molecular biology, it is a frequently applied technique. The same holds for the chapters on ELISA and monoclonal antibodies, issues that have obtained a wide range of applications by immuno-diagnostic screening tests. A nice quality of this book is that the advantages as well as the disadvantages of certain methods are given. This holds also for monoclonals: the authors give nicely what can and what cannot be achieved with this development.

The second part of the book deals with a number of techniques used in nucleic acid research. Concerning these techniques it is evident that the rapid development of methods cannot completely be covered by these kinds of textbooks. For example, cloning vectors: only the most general vectors are described for cloning, expression and sequencing purposes. The possibilities of modern molecular biological techniques are given via a description of the transformation capacity of *Agrobacterium tumefaciens* to plants. In this respect it is a pity to read that "we are still away from the practical application of this phenomenon for the improvement of plant species", whilst such promising and already applicable results have recently been obtained. Also the absence of a description of such techniques as direct DNA transfer, electroporation, relevance to monocot plants is an omission (a suggestion for part III of the Series?). Some of these transformation methods are described for animal systems.

Several techniques for cloning in yeast and in lambda are described and it is nice to see that the simple but important technique of the dot blot procedure is given in detail. In addition, detailed descriptions of autoradiography and fluorography, and synthesis of oligo's are available.

The up-to-date nature of the bood is illustrated by the chapter on DNA footprinting, a method important for studying regulation of gene expression. Attention to the regulation of gene expression is also given in the chapters an in vitro transcription and the use of mutations in promoter regions to study gene expression. Ending the book with a chapter about the use of the computer in DNA research illustrates the up-to-date nature of the book.

In conclusion, this book is certainly a valuable acquisition for those working in molecular biology. Students and teachers will profit from its straightforward description of methods, but also researchers will make use of it. They will have value for their money.

G. J. Wullems, Nijmegen

**Bhojwani, Sant S.; Dhawan, Vibha; Cocking, E.C.: Plant Tissue Culture, a Classified Bibliography. Developments in Crop Science, Vol. 9.** Amsterdam, Oxford, New York, Tokyo: Elsevier 1986. 764 pp. $ 194.00.

The introduction of this voluminous book opens with the journalistic platitude "We are passing through the era of biotechnology" and continues on to indicate that the promotion of biotechnology will depend on the fashionable application of plant tissue culture to its industrial application in biotechnology. In former times one would say that the authors have emptied their most eagerly compiled filing-cabinet; nowadays it is simply a matter of asking the computer the right shibboleths for retrivals – and the book is ready. If someone, like this reviewer, is so old-fashioned as to actually want to read books and see the title printed, he will greedily grab this book, not for itself, but for the information he can extract from it. It presents the ever-increasing information on plant tissue culture gathered from 12,000 articles, extracted from more than 150 periodicals and 100 books. The references, cited with full titles, have been classified under 26 subject headings. Chapter 27 lists relevent books and proceedings of conferences; abstracts are not included. A detailed index of plant names accomodates the reader's access to tissue cultures of a specific crop plant. The survey was begun in 1960 and generally extends to 1984, although in many cases articles from 1985 are included. Papers published in languages other than English have been excluded except when they have an English summary. In principal this bibliography has to be as incomplete as the earlier one of Pierik (1979) on "In Vitro Culture of Higher Plants" and the annotated bibliography of Brown and Sommer (1974) on gymnosperm tissue culture. Unfortunately, this incompleteness may be the fate of all these types of compilations. H.F. Linskens, Nijmegen

**Raghavan, V.: Embryology in Angiosperms. A Developmental and Experimental Study.** Cambridge: Cambridge University Press 1986. 303 pp. Hard bound $ 39.50.

During the last 2 or 3 decades a multidisciplinary approach has lead to a rapid progress in our knowledge of embryogenesis in angiosperms. Many theoretical problems have been elucidated, and a number of new techniques have proven to be very significant in plant breeding, enhancing reproductivity, and improving crops. At the same time, a vast amount of information has been accumulated. "Embryogenesis in Angiosperms" appears for the first time in a synoptic form. It has brought together the most recent knowledge of developmental, biochemical, cellular, and experimental aspects of embryogenesis in angiosperms. In this monograph an extensive, comparative description of in vivo and in vitro processes of embryogenesis in angiosperms has been made. Emphasis has also been laid upon somatic and pollen embryogenesis. Applied aspects of embryogenesis, such as embryo rescue and preservation of germ plasm are introduced and reviewed. Information on the regulation of gene activation during embryogenesis is presented as well.

A variety of students and teachers will find this book a useful reference. They will be able to use the integrated text for courses in plant embryology. To specialists in angiosperm embryogenesis, this book will be a helpful review of the current research in different aspects of the field.

Li Yi Qin, Beijing

**Janick, J. (ed): Horticultural Reviews, Vol. 8.** AVI Publ., Westport, Connecticut 1986. 392 pp. $ 54.00.

This recent volume of the Horticultural Reviews, which is sponsored by the American Society for Horticultural Science, contains two reviews which are of direct interest to breeders working with those particular plants: the navel orange (F.S. Davies) and chestnut blight resistance (G.J. Griffin). Supplied with a complete list of characteristics and origins of major navel orange cultivars, the reader learns the difficulty for even the most experienced expert to identify cultivars because of the high incidence of mutations and minor taxonomic differences that exist among selections. The navel orange itself is a mutation of other sweet oranges but even more importantly it is an unstable mutation, which makes cultivar taxonomy a controversial subject, many are classified on the basis of tree morphology and harvest date.

Chestnut blight, caused by the fungus *Endothia* (Cryptonectria) *parasitica,* kills stems and branches of *Castanea mollisima* and *C. sativa* all over North America and Europe, and has been probably introduced to Japanese and Chinese chestnuts. Some trees are recovering from the disease, which led to the discovery of hypovirulence in *E. parasitica* and natural biological control of blight. It has been shown that cytoplasmic determinants – identified as double-stranded RNA, thus microviruses – are associated with hypovirulence. Because Chinese and Japanese chestnuts (*C. crenata*) have the greatest level of blight resistance, those species are used extensively in resistance breeding programs, although nothing is known about the genetics of resistance in *C. sativa.* For more details, the interested reader is directed to a review of Burnham et al. in volume 4, pp 347–397, of Plant Breeding Reviews.

Other review articles are of additional interest to breeders: on the genetic factors affecting sensitivity of horticultural crops against gaseous air pollution: there are species and cultivar differences in sensivity to gaseous pollutants, so that breeding for insensitivity seems to be promising. Best-known is the insensitivity of potatoes exposed to $O_3$. Finally, breeders' attention is drawn to the potential of edible aroids and avocado, as well as to the special problems of physiological response of fruit trees to pruning, which includes cold hardiness, fruit-setting and quality. H.F. Linskens, Nijmegen

**Janick, J. (ed.): Plant Breeding Reviews, Vol. 4.** AVI Publ., Wesport, Connecticut 1986. 407 pp. $ 54.04.

This new volume is dedicated to Henry M. Munger who was both a vegetable breeder whose work centered on the production of cultivars and inbreds of slicing cucumber, muskmelon, onion, winter squash and tomato, and a devoted teacher at Cornell between 1943 and 1983.

The present volume contains ten survey articles and tends to deal with fundamental problems, such as the review on pollen tube-style interaction, and the excellent and clear treatment of mobile elements in maize by Peter A. Peterson. Tissue culture and cell selection are again suggested as assessments of crop improvement, as is managing somaclonal variation in alfalfa.

Pure breeding aspects are covered extremely well in the article on drought resistance of soybeans and common bean for yield in mixed cropping. It sounds reasonable that a change of thinking is necessary in order to get maximum crop yields in mixtures: plant breeders must breed for the cropping system (maize and beans) rather than for individual components (maize or beans). It is a considerable challenge to breeders to increase the complexity of yield by testing the species combinations that are required, thus contributing greatly to improving the wellbeing of subsistance farmers. Additional articles concern sweet potatoes, chestnut, tomato and oil palm.

This series will be of interest to breeders who wish to know the scientific background of their work.

H.F. Linskens, Nijmegen

**Matthews, S. (ed.): Advances in Research and Technology of Seeds, Part 10.** PUDOC, Wageningen, The Netherlands 1987. 74 pp

The penultimate issue of the series edited by the International Seed Testing Association contains three contributions. M. Perl reviews the biochemical aspects of germination and maturation (seen the intention of the series, it is not surprising that the advances contributed by investigations on weed seeds, eg. *Agrostemma githago*, are not included). A. Boyd considers technological aspects of seed processng (or seed conditioning in American terms). Strangely enough, grading and pickling are not included. The final contribution, by Arne Wood, on the organization and legislative background to seed quality control in the marketing of seeds within and between countries, contains a short chapter which is interesting to breeders: it is on the effects of developments in plant breeding on seed quality control. It is evident that the breeding of hybrids and the introduction of legal protection for new cultivars of many crops is a special challenge for institutions involved in seed testing. The introduction of legal protection for new improved varieties has generated the expectation that seed quality control agencies will cooperate with breeders. The Federation of International Seed Trade (FIS) has published the "FIS Arbitration Procedure Rules for the International Seed Trade, 1979" which may be a help in protecting seed breeders from fraud.

H. F. Linskens, Nijmegen

**Goodridge, K. G.; Hanson, R. W.: Metabolic Regulation: Application of Recombinant DNA Techniques. Annals of the New York Academy of Sciences, Vol. 478.** New York Academy of Sciences, New York, N.Y. 1986. 320 pp

The phenomena involved in the regulation of the flux of carbon through metabolic pathways are still technical barriers to a clearer understanding of the regulatory processes. Many constraints make it difficult to varify the mechanisms responsible for coordinating the metabolic responses between tissues. However, recombinant DNA technology has made a breakthrough possible: it is now possible to introduce the gene responsible into cellular processes. Although this approach is still in its formative stage, it provides a powerful weapon in the study of metabolic regulation. The proceedings of the conference held by the NY Academy in 1985 reviews major advances in hormonal regulation and differentiation of metabolism, the role of cAMP in regulation, structure-function relationships in metabolically important proteins, as well as the expression and function of foreign cells in culture and in intact animals. Some of the new techniques described that combine the application of recombinant DNA technology with existing techniques of animal genetics and somatic cell genetics, result in even more powerful analytical approaches.

H. F. Linskens, Nijmegen

**Bernal, J. E.: Human Immunogenetics – Principles and Clinical Applications.** London, Philadelphia: Taylor & Francis 1986. 217 pp., 39 figs., 26 tabs. Soft bound £ 12.00.

"This introductory text will meet the needs of students, clinicans and researchers by covering immunology and genetics . . .". The author accomplishes this aim with his book in a striking manner. After an introductory chapter on the general aspects of the human immune system, the molecular structures, biochemistry and genetic controls of immunoglobuline molecules, the HLA- and complement system and of the T- and B-cell mediated immune response is clearly described in subsequent chapters. Both recent advances of recombinant DNA technology and results from classical methods in genetics (like population studies) are discussed according to the basic concepts in the development and the expression of the immune system.

Disorders of T- and B-cell metabolism, of the complement system and of phagocytosis are dealt with in the second part. Thereby, aspects of clinical situations, diagnosis and genetics of these disorders are clearly presented. The problems of transplantation, and the association of different diseases with the HLA- or ABO-system are discussed in other chapters.

The last part of the book deals with the chromosomal location of genes which are involved in the expression of the immune response and with the association of chromosomal aberrations and immuno defects. Short appendices on the clinical symptoms of immune diseases and the methods of immunological diagnosis, and an extensive glossary complete this book, which will be especially interesting to students and clinicans.

L. Petruschka, Greifswald

**Botchan, M.; Grodzicker, T.; Sharp P. A. (eds.): DNA Tumor Viruses: Control of Gene Expression and Replication. Cancer Cells Cold Spring Harbor Laboratory, Vol. 4.** Cold Spring Harbor Laboratory 1986. 620 pp, many figs. Soft bound $ 75.00.

"DNA Tumor Viruses: Control of Gene Expression and Replication" is the fourth volume of "Cancer Cells" and was published after the third Cold Spring Harbor Meeting on cancer cells in September 1985 (the other three are: vol. 1, "The Transformed Phenotype"; vol. 2, "Oncogenes and Viral Genes"; vol. 3, "Growth Factors and Transformation"). The articles presented in this volume reflect the latest, and very exciting advances in molecular biology and biochemistry of Simian virus 40, polyomavirus, adenovirus, papillomavirus, herpes simplex virus, and the Epstein-Barr virus. They encompass RNA transcription and the interaction of proteins with promoter and enhancer elements; RNA processing and control of translation; transformation, transforming proteins, and replication regulations. The roles of viral trans-activating regulatory proteins such as Simian virus 40 T antigen, adenovirus E1A proteins, herpes virus immediate early proteins, and the bovine papillomavirus E2 protein are emphasized. Special introductory articles written by several leading investigators cover the extensive history, current developments, and possible future of research into these DNA tumor viruses. Readers of this book will not only update their knowledge of molecular biology and biochemistry of these DNA tumor viruses, but also benefit from the resulting overviews in the field.

Li Yi Qin, Beijing

# Announcement

## Australian Plant Breeding Conference

The 9th Australian Plant Breeding Conference will take place between June 27 and July 1, 1988, at Wagga Wagga, NSW (Australia). It will provide a forum for the exchange and discussion of technical information and viewpoints relevant to plant improvement.

The themes of the conference will be: Plant Breeding Objectives; Genetic Resources and Variability; Selection at the Cell and Handling; Public, Private and International Plant Improvement; Achievements and Benefits from Plant Breeding.

The organization committee is chaired by Dr. E.C. Wolfe; further information and second circular from the secretary – Dr. Barbara Read, NSW Department of Agriculture, Agricultural Research Institute, Private Mail Bag, Wagga Wagga 2650, Australia.