Book reviews

Volume 1, Using molecular marker technology in studies on plant genetic diversity: learning module, M. Carmen de Vicente and Theresa Fulton, Volume 2, Genetic diversity analysis with molecular marker data: learning module, M. Carmen de Vicente, C. Lopez and Theresa Fulton, International Plant Genetic Resources Institute (IPGRI), Rome and Institute for Genomic Diversity, Cornell University, Ithaca, NY, 2004 CD Rom, $40.00 ISBN 92 9043 627 1.

The CD Rom developed jointly by researchers from the International Plant Genetic Resources Institute (IPGRI, Rome, Italy), the Institute for Genomic Diversity at Cornell University (Ithaca, NY, USA) and the Universidad Nacional Agraria—La Molina (Lima, Peru) includes two volumes Using Molecular Marker Technology in Studies on Plant Genetic Diversity: Learning Module and Genetic Diversity Analysis with Molecular Marker Data: Learning Module in PDF format with links to the original Microsoft PowerPoint® slide shows, from which the content ensues. The authors’ aim was to provide capacity building and research tools on biodiversity analysis with the aid of DNA markers, particularly for developing country users, who often cannot access up-to-date literature and ensuing technology. The first volume deals with molecular marker technology throughout and includes information on protein-, DNA- and PCR-based methods. The second volume gives readers the opportunity to browse information on genetic diversity analysis using molecular marker data, and includes among its sections basic concepts of population genetics, measurements of genetic diversity and information about software programs for analysing such data. There are explanatory graphics that, together with photographs and research examples, assist the reader to understand better the experimental protocols about the use of molecular markers to assess genetic diversity and germplasm management. In this regard, this CD Rom could be a useful tool for university teaching in the subject or for a self-learning-by-doing approach. Likewise, the authors did a comparative analysis (including relative costs) of the protocols for biodiversity research with molecular tools, which can assist young researchers to select the most appropriate method for their own work. Useful reference and equipment lists are added in each module that are meant for scientists lacking deep knowledge on both genetics and plant molecular biology. I suggest that any further versions provide more raw data for exercises and their solutions, so the users of the CD Rom can learn more by doing the right analysis of such datasets. The materials included in this single CD Rom are of particular interest to plant genetic resources researchers, especially in the developing world, where print materials on the subject may not be always easy to access or they may may be expensive, or sometimes the available books in the local library are outdated.

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Seed conservation—turning science into practice, R. D. Smith, J. B. Dickie, S. H. Linington, H. W. Pritchard and R. J. Probert (eds), Royal Botanic Gardens, Kew, 2003, 1023 pp., £59.00, $107.95 (pbk), ISBN 1 84246 052 8.

This large edited volume is the outcome of a 2001 workshop hosted at the Royal Botanic Gardens’ Wakehurst Place site by the Millennium Seed Bank Project (MSBP). The MSBP, co-ordinated by the Royal Botanic Gardens, is a global collaboration for the emergency conservation of plant diversity, that seeks to conserve in the form of seed, one-tenth of the world’s flora by 2009. The workshop volume includes 56 papers from the 88 delegates, covering 27 nations. The workshop had three aims: to review current knowledge of seed collection and conservation for non-domesticated species, to compare and contrast these techniques with those for cultivated species, and to share state-of-the-art techniques for banking non-domesticated plants. The book is arranged into three sections which reflect these aims: Planning and Collecting (Chapters 1–14), Seed Processing and Testing (Chapters 15–32), and Seed Storage and Utilisation (Chapters 33–54). There are two final chapters: the first gives an editorial perspective attempting to synthesize key points in the individual chapters, workshop discussions and very recent papers from the literature. The second looks at the probable future influence of initiatives such as the Global Strategy for Plant Conservation and the International Treaty on Plant Genetic Resources for Food and Agriculture.
The aim of the book is twofold. Firstly, it seeks to establish a baseline of understanding of the subject. Secondly, it aspires to be more than a set of recipes as to how to form seed banks, but to provide an overall map to help to guide and inspire those from all over the world. The global coverage of the book is indeed impressive, although the focus reflects that of the MSBP, being deliberately on 24,000 dryland species. Representatives from as far apart as Botswana, Lebanon, Mexico and Australia joined a core group from the Seed Conservation Department of the Royal Botanic Gardens, Kew. Those who will benefit from this book individually include plant geneticists, breeders, seed biologists and taxonomists. But the book is also a major resource for botanic gardens and other organizations that are considering the establishment of seed banks. There are obvious overlaps with the previous International Board for Plant Genetic Resources handbooks, but the coverage here is so extensive that there is much material that can be seen as necessary modernization.

The aim of baseline understanding was certainly met—with 56 chapters and over 1000 pages this was always going to be a most comprehensive volume. Indeed it speaks well for the organizers that they managed to obtain full written chapters from such a high proportion of the delegates! The second aim, of inspiration, is really only tackled in the final two chapters. In the first, Roger Smith’s team of editors has provided a useful synthesis, which some still will find an exciting roadmap. In the second, the book is brought as up to date as possible through the inclusion of descriptions of three major initiatives for seed banks that had a large international influence throughout 2001 and 2002. This chapter also deals with the implications of these initiatives. However, it also definitely provides inspiration as Smith and Hawtin put aside the cautious tones of the editors and express their personal views on the future for this area. As a biometrician, I was intrigued to find the final words in the book were the advice that ‘Numbers rarely deceive; use them wherever possible’.

The volume includes a useful species index and general index. All in all, an essential, comprehensive volume for those in the field, and a unique reference for those outside it.

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**Seed fate: predation, dispersal and seedling establishment**, Pierre-Michel Forget, Joanna E. Lambert, Philip E. Hulme and Stephen B. Vander Wall (eds), CABI Publishing, Wallingford, 2004, 432 pp., £75, $140 (hbk), ISBN 0 85199 806 2.

If you have ever wondered how that tree or plant got to be growing in that particular spot then this book will help. The collection of papers and reviews does much more and discusses the interactions between plants, insects and animals in the dispersal and establishment of temperate and tropical forests. In the preface, the editors state their aim as being ‘to present and to evaluate the most recent data on seed fate in diverse geographical regions around the world’. They achieve this aim admirably and in addition provide the student and researcher with a wealth of information, data and references for further study.

Following the introduction there are 22 papers grouped into major topics of: seed predation, primary seed dispersal and secondary seed dispersal. The papers discuss and review the ecological interactions between plants, seed and dispersal agents. The geographic range is impressive, covering both tropical and temperate forests worldwide.

The role as seed predator or seed dispersal agent is discussed and possibilities of co-evolution debated. The different mechanism of scattering, predating and hoarding are explored. The roles of insects as secondary dispersal agents particular interested me. The idea of dung beetles helping to disperse seeds from animal dung today and from dinosaur dung in prehistory left a lasting impression. Another area I found particularly thought-provoking was the detailed interactions between primates, their decline in some areas and the effects of forest fragmentation; all creating potential problems for the future sustainability of the diverse ecosystems and interactions which many of the researchers were studying.

As a seed physiologist I found my foray into seed fate and ecology with this book both interesting and informative. The authors manage to put the current work in perspective, interest the reader and suggest future research topics. I recommend this book to both researchers and students. Along with other books from CABI on seed physiology and ecology the readers will have a very useful set of books to help them understand not only how seeds function but how they are dispersed or eaten!

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