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Book reviews

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Enhancing the Use of Crop Genetic Diversity to Manage Abiotic Stress in Agricultural Production Systems, eds D. JARVIS, I. MAR & L. SEARS. 97 pp. Rome, Italy: IPGRI (2006).
US$ 20.00 (Paperback) ISBN 92 9043 722 7

The book is the product of the project 'Strengthening the scientific basis of *in situ* conservation of agro biodiversity on-farm' supported by the Governments of Switzerland, the Netherlands, Germany and Canada and by UNEP/GEF. It includes 11 papers presented at a workshop in Budapest, Hungary (23–27 May 2005) which was attended by 26 participants from 17 different countries.

The objective of the workshop was to address a number of questions concerning the diversity in local varieties managed by farmers and subject to significant abiotic stresses. These questions include: (a) Does the use of stress tolerant germplasm cost lower yield? (b) How different are the local varieties with respect to the specific traits conferring stress tolerance or resistance? (c) Do tolerant or resistant populations have sufficient genetic variation for other traits thus allowing farmers to develop cultivars with additional desirable characteristics (pest resistance, quality, etc.)? (d) Do farmers manage such materials to prevent dilution of their stress resistance characteristics and does this limit adaptability?

The publication addresses two extremely important topics such as abiotic stresses (drought, cold and salinity) and genetic diversity as well as the relationships between the two. The majority of the papers were on drought (5) and on cold (4) with two papers on salinity.

The first paper on 'Genetic features of populations from stress-prone environments', by A. Brown, sets the scene and represents by far the best paper of the book and the one which anticipates all the critical questions. The literature coverage particularly on participatory plant breeding and genotype × environ-environment interactions could have been wider, thus matching the breadth of the paper.

In dealing with the relationships between genetic diversity and abiotic stresses, one of the fundamental and long-debated issues in plant breeding, i.e. the trade-off between yield in stressed and non-stressed environments, was also discussed. Also in this case, the literature coverage could have been wider.

A number of papers deal with the interaction between farmers and the use of genetic diversity by farmers: farmers have manipulated genetic diversity for millennia before the advent of modern plant breeding; they still use genetic diversity at different levels – different crops, different varieties within the same crops, heterogeneous varieties, mixtures of crops and varieties – as a way to cope with the unpredictable nature of abiotic stresses which typically vary in occurrence, timing and duration.

The three groups of papers, one for each type of abiotic stress, are followed by a brief but very informative synthesis. The synthesis of the papers on drought emphasizes the role of farmers in managing genetic diversity, and the issue of difference selection criteria between farmers and breeders. The synthesis on salinity raises a generalized problem in several developing countries, which is the system of releasing varieties which deserves a specific mention because it largely goes against many of the concepts and the ideas of the book. Even if the variety release systems vary from country to country, they all share some characteristics such that (1) it takes a long time, (2) there is a poor choice of testing sites, (3) the trial management is not representative, (4) the trial analysis is biased against environments affected by abiotic stresses, (5) traits important to the farmers are not included, (6) farmers' opinion is not considered, (7) lack of transparency, (8) trials are affected by poor efficiency and lack of innovation and, most importantly, (9) they promote genetic uniformity. Even a limited coverage of the obstacles created by the current system of variety release to the actual enhancement of the use of crop genetic diversity would have been highly desirable.

The final section of the book summarizes the group discussions which addressed the adaptation of local crop varieties to the climatic and edaphic stresses in particular systems, the genetic variation for stress responses, and the role of farmer management practices at various scales and indicates a broad range of potential research questions.

Eventually, the final working-group period addressed the range of abiotic stresses as they affect crop production, and criteria for ranking them. The suggested criteria for ranking stresses included the risk

to poor farmers, the extent of potential damage to agricultural production, the area of the land affected, and the likelihood that one stress might worsen other biotic and abiotic stresses. Using those criteria, drought was ranked as the highest priority, followed by low soil fertility, soil acidity and cold stress. This ranking largely reflects that of scientists working in close contact with farmers' communities.

A table listing a minimum set of questions on abiotic stress and linking researchers' views of the challenges abiotic stresses present with farmers perception and knowledge, concludes the book.

The book definitively contributes to improve the understanding of some of the issues related to the amount and distribution of crop genetic diversity particularly in the presence of abiotic stresses, and how the farmers manage it; because of the increasing pressure of climatic changes, and because of the wide range of research questions it raises, the book is recommended for both research scientists and research administrators.

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Vegetable Diseases – A Colour Handbook, by S. T. Koike, P. Gladders & A. O. Paulus. 448 pp. London: Manson Publishing Ltd (2007). £95.00. ISBN 1840760753 (hardback).

There is always a need for easy to use, accessible, up-to-date and accurate pictorial guides to diseases of plants and I believe this book goes a long way to achieving these requirements for vegetable crops. The book has three main sections. The first is an introduction to vegetable crops and diseases where the general background to pathogens and their significance to vegetable production are considered. This is really worth reading to appreciate the questions to consider before examining and attempting to diagnose problems with an infected plant. The second major section is the actual description of the diseases of vegetable crops arranged alphabetically in plant family groups with a final section on speciality and herb crops. This is well organized, clear and provides excellent coverage. I particularly like the way that for some broad host range pathogens such as *Sclerotinia* species, cross-references are made to the same pathogen on different hosts, enhancing the information available. The final section comprises a useful glossary and index. The index generally seems to function well although the alternative common names of cilantro and coriander are used without clear linkage (see p. 53, 396 and 440) in contrast to eggplant and aubergine. I would also have liked to have seen some old but well-established Latin names for some plants such as *Lycopersicon esculentum* for tomato, at least mentioned for consistency even though formally they have been superseded. However, these are minor points of detail.

The authors have targeted this book at a very wide audience from experts such as research and extension plant pathologists, through teachers and students, farmers and regulators to interested home gardeners and I believe they have generally been very successful in this aim. While never substituting for use of detailed academic texts or the services of a plant pathology laboratory for accurate diagnosis, it really is a useable and helpful book that I'm sure will find regular use with many of the target audience. At £95.00 it is rather expensive to buy personally, perhaps reflecting the cost of producing a book containing over 600 colour photographs on glossy paper, but it should be a valuable addition to both university and public libraries.

JOHN M. WHIPPS