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Book reviews

Brown, A. H. D.; Frankel, O. H.; Marshall, D. R.; Williams, J. T.(eds.): The Use of Plant Genetic Resources. Cambridge: Cambridge University Press 1988. 382 pp., many figs., many tabs. Soft bound $ 17.95.

The present book forms the proceedings of a workshop on "Genetic Resources and the Plant Breeder" organized by the International Board for Plant Genetic Resources (IBPGR) in Montpellier, 9–12 September, 1986. It provides a comprehensive state of the art on the use of plant genetic resources by a number of leading scientists and plant breeders from both the private and the public sector.

Subjects are dealt with in six sections: the role of genetic collections in research and breeding; use of collections; size and structure of collections; evaluation; wild relatives of crops; technological or scientific innovations that effect of use of genetic resources.

The central theme of each section is the exploration of factors that limit the use of genetic resources in plant breeding and how genetic variation can be effectively sampled in collections of manageable size. Case studies provide insight into the use of genetic resources in the breeding of such crops as sorghum; potatoes; and cereals. The need to improve accessibility of genetic variation through the collection of adequate data on origin, characterization and evaluation of accessions in collections is highlighted, and recent concepts of so-called representative sub-samples (core collections) for this purpose are competently discussed. Emphasis is on the requirements of conventional plant breeding for high-input agricultural production systems. It would have been interesting if an attempt had been made to analyze why conventional plant breeding has so far made so little impact on low-input agriculture in less favourable production environments in developing countries. When all is said and done, it is a sobering thought that the most effective users of genetic resources are the millions of subsistence farmers in those regions, who for probably good but not fully understood reasons (yield stability, consumer preference, etc.) prefer to rely on local landraces for their food production. An equally authoritive treatment on plant breeding and the use of genetic resources for these production systems is urgently required.

J. J. Hardon, Wageningen

Iwanami, Y.; Sasakuma, T.; Yamada, Y.: Pollen. Illustrations and Scanning Electronmicrographs. Berlin Heidelberg New York: Springer 1988. 198 pp., 59 figs., 302 plates. Hard bound DM 120.–.

Pollen is a frequent subject of study in plant reproduction, but frequently only as a tool in plant cytology, physiology and morphology. The book *Pollen* consists of short texts and an abundance of illustrations and scanning electron micrographs. The authors justify this framework with the surface pattern of the grain as a "beautiful art work of nature".

The subjects presented cover the aspects of pollen with respect to its function in reproduction mainly in the chapters "Genesis of Pollen", "Pollen Morphology", and "Pollination and Pollen Tube Growth". Its use as a tool in cytological, physiological and genetical investigations of pollen is also covered. The last two chapters on pollen in air and pollinosis and pollen in soil add to its application potential. While the texts are short and to the point, the risks in such an approach were not avoided: the omission of representative data, e.g., the action of volatile substances on pollen tube growth or longevity was not mentioned, or too much condensing, e.g., about the pollen wall stratification or self-incompatibility. The text contains mistakes, and it is a pity to read in both the preface and "Genetics of Pollen" that pollen is the male gamete of the flowering plants. Subsequent text corrects this statement. Some of the hard-line schemes are very attractive. The photographs are not all of good quality: a number of SEM pictures show a too high contrast. A block of 91 SEM pollen pictures follows the chapter "Pollen Morphology" without a clear introduction or sequence, and the reader has to look at the pictures with scarcely any information at all. As a result the book is reduced to providing general information about pollen mainly by means of figures. Such an approach is a serious restriction to scientists involved in pollen research. The short literature list and the abundance of SEM pictures give the impression that only some aspects of pollen culture interest the authors, e.g. the use of the amyrose instead of amylose.

The attractive lay-out and informative contents restricts the book to an introduction to the science of pollen.

M. T. M. Willemse, Wageningen

Coleman, A. W.; Goff, L. J.; Stein-Taylor, J. R. (eds.): Algae as Experimental Systems. Series on Plant Biology, Vol. 7. New York: Alan R. Liss 1989. 332 pp., many figs. $ 70.00.

Algae have two characteristics that predestine this plant group to be ideal material for use in fundamental research: they are easy to handle under laboratory conditions, and they are relatively small in size and simple in construction. It is therefore not surprising that some microbiologists would like to tear these plants away from botany and integrate them into microbiology. Three energetic ladies have edited the papers and posters of the 1988 summer conference of the American Society of Cell Biology on "Algal Experimental Systems in Cell Biology Research" and consequently demonstrate that algae have been used for various fundamental discoveries in basic biology and even genetics. For example, *Chlamydomonas* was used for the genetic analysis of body functions and assembly; *Volvox* mutants, in understanding pattern formation; progress in our understanding of morphogenesis and cellular recognition is unthinkable without algae; molecular analysis of the light-harvesting system of photosynthetic membranes and chromatic adaptations requires red algae.

This book can be recommended as a reference book to both teachers and students alike. In addition, it will serve to be inspirational to those investigators who are looking around for a simple, two-dimensional system for use in solving basic problems in cell biology, such as cellular interaction, differentiation, sexual agglutinability, pheromones, and cytoplasmic organization.

H. F. Linskens, Nijmegen