Theor Appl Genet (1989) 77:608

Book reviews

Rigby, P. W. J. (ed.): Genetic Engineering 6. London, New York: Academic Press 1987. xi/183 pp. Several figs and tabs. Softcover. £ 14.–.

The appearance of the 6th volume of Peter Rigby's "Genetic Engineering" emphasizes the important developments occurring in plant molecular biology. Three chapters of this issue describe the two aspects important in gene expression: at the nuclear genome and at the cytoplasmic genome. In addition, there is a chapter on vectors for genetic engineering.

Developments have occurred very quickly during the last few years, which has resulted in the availability of a wide range of procedures for getting foreign DNA into plants. The last chapter gives a description of these methods and the vectors used. It is pleasant to see almost all the possibilities collected together and described in an easy-to-read way. Most attention is focussed on the use of *Agrobacterium*, CaMV, and direct gene transfer as these applications are the most widespread.

More basic information is presented in the chapters on genes encoding seed storage proteins. The author presents a good overview about this complex class of genes and the various gene families. In addition, the promoter structure of the zein gene family is described and how the gene expression is regulated.

An even more complex aspect to plant molecular biology is presented in the chapter on the cytoplasmic genome by David Lonsdale, an expert in the field of mitochondrial genes. It gives an excellent overview of the chloroplast genome, its complex structure, and regulation of gene expression. In addition, the mitochondrial genome is described conscientiously at the level of genome structure, transcription, and regulatory aspects. Attention is also focussed on the possibilities of manipulating the cytoplasmic genome. This is a very important aspect in genetic engineering and not yet applicable. The author, however, gives the state of the art and presents those data that allow an optimistic view concerning the cytoplasmic genetic manipulation in the future.

In summary, every plant molecular biologist, both with fundamental and breeding interests should read this issue of the series Genetic Engineering. G. J. Wullems, Nijmegen

Konijn, T. M.; Van Haastert, P. J. M.; Van der Starre, H.; Van der Wel, H.; Housley, M. D. (eds.): Molecular Mechanisms of Desensitization to Signal Molecules. NATO ASI Series H: Cell Biology, Vol. 6. 335 pp. Berlin, Heidelberg, New York: Springer 1987. DM 158,–. Hard cover.

This book comprises the proceedings of the NATO advanced research workshop on molecular and cellular processes underlying desensitization to signal molecules, which was held at Noordwijkerhout in May 1986. Unfortunately, it contains no genetical aspects. Signal adaptation, receptor modification, and transduction are all terms used in the molecular explanation of cellular processes like chemotaxis, chemosensing, chemoattractants, macrophage metabolism, hormone action, and membrane physiology. For cell biologists, the most interesting part will be the series of lectures on inositol phospholipid-coupled systems. Apparently, these systems are important in cell response systems and synaptic signal transduction, and for understanding some potential sites of modulation. For the experts, the most impressive outcome of this meeting was the recognition of functional and structural similarities of signal transmission chains, which employ G-proteins for amplification and whose properties are described. H. F. Linskens, Nijmegen

Schmidt-Vogt, H.: Die Fichte. Ein Handbuch in zwei Bänden. Band II/1: Wachstum-Züchtung-Boden-Umwelt-Holz. In cooperation with W. Liese, D. Dujesiefken and K. E. Rehfuss. XVI/563 pp, 264 figs, 148 tabs. Hamburg, Berlin: Parey 1986. Hard bound. DM 198,–.

Spruce is found in every boreal forest around the world, and in Central Europe it is the most wide-spread and important of all the trees found in the forests. This handbook under review will ultimately comprise four volumes. The first one (*Taxonomy, Morphology, Ecology, Forest Association, Occurrence*) came out in 1977 and has now been followed by a second one, which is principally directed towards practical foresters. It covers the principles of production, the effect of spruce forests on the soil and the human environment, and the properties of spruce wood. The chapter on the genetics and the breeding of spruce comprises some 40 pages and is based on more than 500 literature references. However, breeding is not the primary interest of the author and his collaborators. Generative and vegetative propagation are only briefly described, as is the analysis of karyotype and genetic variability. It is important to be able to distinguish between a geographic-genetic variation pattern and the genetic variation within populations. Present-day spruce populations in Europe are relics of migrations which occurred during various periods of the ice-ages. Even today the ecological selection processes on the stands during those periods can be established. Large international projects of the IUFRO are devoted to studying spruce origins. The heritability of its various characteristics is of fundamental importance in spruce breeding. Although only a very limited number of these properties have been genetically determined, these are already being used in selection breeding. Lately, the genetic basis of a resistance to emmissions has become increasingly important as the spruce is generally very emmission sensitive. One prerequisite for a successful selection breeding is detailed knowledge of the ecological-geographical race differentiation of the variation pattern of the characters in the area. Crosses of *Picea abies* with a least 24 other *Picea* species have been made. More important, however, are crosses with various descendants, especially those involving resistance to frost, snow, ice, drought, acid rain, fungi, and insects, and for wood quality. The maintenance of gene pools in the regions where spruce naturally occur are of great importance.

This book is an important theoretical and practical handbook for both the forester and the forest botanist. For tree breeders, the information compiled in this volume provides a first good look at the problems confronting him. For more detailed information, the reader should refer to the extensive literature list. H. F. Linskens, Nijmegen