Plant Genetic Engineering

Edited by J.H. Dodds

Cambridge University Press; Cambridge, 1985

312 pages. £25.00, $39.50

In view of the current explosion of interest in plant molecular biology, a book entitled 'plant genetic engineering' is likely to attract a potentially wide readership. The present volume is a collection of articles mainly concerned with reviewing technical advances and evaluating the impact that recombinant DNA techniques may have in plant improvement programmes. It is not a manual of laboratory methods such as appear in the IRL Press 'Practical Approach' series.

The first two chapters, which are rather brief and unspecific, consider the isolation, culture and fusion of plant protoplasts. More substantial is the subsequent chapter on the use of isolated organelles and sub-protoplasts in somatic fusion strategies, and this is followed by short but lucid introductions to the background and development of T_i-plasmid-based vectors and potential uses of viral vectors. The three final chapters deal with the actual applications of gene technology to plant systems, with specific reference in chapters 7 and 8 to ribulose-bisphosphate carboxylase and seed storage proteins respectively, and in chapter 9 to a more general cross-section of potential applications. The chapter on seed storage proteins is particularly comprehensive, running to 125 pages, and includes the only discussions in the book on the methods of cDNA cloning and sequencing, and gene expression studies. These sections would perhaps have been better placed earlier in the book, as would some of the important general introductory points stressing, for example, the large gaps in our knowledge of basic plant metabolism, which occur in chapters 7 and 9.

Organisation of material apart, this book collects together thoughtful, highly readable and generally well illustrated accounts of topics of much current interest. It is clearly impossible, in such a rapidly expanding field, to remain up to date, and topics such as the targetting of gene products to organelles and the use of anti-sense RNA are not covered. The book can, however, be recommended to advanced students, researchers, and especially teachers in this area by virtue of its clear presentation of the potentials of, and, equally importantly, the constraints relating to, the application of recombinant DNA techniques to crop plants.

R.A. Dixon