

Plant biotechnology has become a leading discipline in basic as well as applied sciences. It is being taught at both undergraduate and postgraduate levels, and is being used by industries and policy making agencies. This book caters to the needs of students as a text book for plant biotechnology courses and at the same time provides a practical approach to follow a technique which is given in the forms of protocols. Application of techniques for commercial use has also been emphasized in every chapter.

The book comprises three sections. The first section deals with plant tissue culture aspects viz. nutrition medium, micropropagation, organ culture, cell suspension culture, haploid culture, protoplast isolation and fusion, secondary metabolite production, somaclonal variation, cryopreservation and germplasm storage. The second section deals in the understanding of recombinant DNA technology and thus chapters on genetic material, organization of DNA in the genome and basic techniques involved in recombinant DNA technology have been given. The third section comprises of sixteen chapters which deal with different aspects of rDNA technology covering gene cloning, isolation of plant genes, transposons and gene tagging, *in vitro* mutagenesis, polymerase chain reaction, molecular markers and marker assisted selection. Nuclear, chloroplast and mitochondrion gene transfer methods have been explained separately and emphasis on gene silencing, removal of marker genes, etc. have been emphasized. Genomics covers functional and structural genomics, proteomics, sequencing status of different organisms, metabolomics and DNA chip technology. Impact of recombinant DNA technology chapter deals with the status of biotech crops and their benefits, issues, challenges and also role of rDNA technology in other fields of biotechnology. A detailed chapter on biosafety and regulatory framework in different countries of the world has been included. Issues and controversies arisen at different times on biosafety have also been given. Chapters on bioinformatics and intellectual property rights have been dealt with from the perspective of plant biotechnologists. Emphasis has been given not only on different IPR forms, PBRs and biodiversity issues, but also on IPR protection of plants, microorganism, animals and case studies on IPRs infringements.

About the Author

Dr. H.S. Chawla has 30 years of experience in teaching and research on biotechnology and genetics. He has done extensive work on *in vitro* culture, genetic transformation of plants, molecular markers and has supervised the research of many Ph.D and M.Sc students. He has published books/ manuals on biotechnology and genetic, and on Intellectual Property Rights, and has over 80 research papers in journals of repute. Dr. Chawla has availed fellowships offered by Germany and Canada and has visited many countries of the world. He is the Nodal officer of Patent Information Centre (Uttarakhand, India) for IPR affairs of the state and also the Nodal Officer of Intellectual Property Management Centre at G B Pant University of Agriculture and Technology.

**A CD comprising PowerPoint presentations
is available for INSTRUCTORS on request**

