

Recent Advances in **PLANT BIOTECHNOLOGY** and its **APPLICATIONS**

The present book is divided into five sections. The first section deals with the methodology and bioresource generation, techniques related to genetic engineering, and gene transfer to the nuclear genome and chloroplast genome. The new techniques of genome profiling and gene silencing are also presented. The second section of the book deals with the classical aspect of plant biotechnology viz. tissue culture and micropropagation. Use of genetic engineering via *Agrobacterium* and direct transfer of DNA via particle bombardment to develop transformed plants in *Artemisia*, castor and orchids, and production of recombinant proteins in plant cells have been dealt with in the third section. The fourth section deals with the abiotic and biotic stress tolerance in plants. The basic biology of some of the stress responses, and designing plants for stress tolerance is discussed in this section. The fifth section deals with medicinal plants and alkaloid production.

Ashwani Kumar, Professor, Department of Botany, University of Rajasthan, Jaipur, has earned gold medal in M.Sc. and obtained Ph.D. from Rajasthan University. He also has the distinction of being an Alexander Von Humboldt Fellow (Germany). He was the Honorary Director at the School of Life Sciences, University of Rajasthan. The author's repertoire of published works spreads across 150 research articles in various national and international journals. With an experience of over three decades in his field of research, namely, tissue culture and biochemistry, the author has been at the helm of various major projects carried out by USDA-ICAR, U.G.C., M.N.E.S., C.S.I.R. and DBT. He has long association with Professor Dr. Karl-Hermann Neumann and subsequently with Professor Dr. Sven Schubert at Institut für Pflanzenernährung, Justus Liebig Universität, Giessen, Germany, as visiting Humboldt Fellow and visiting Professor at Toyama Medical and Pharmaceutical University, Toyama, Japan. The author is currently engaged in research on salinity tolerance at molecular level in cereals and crops.

Sudhir K. Sopory, Head of Plant Molecular Biology Division at the International Centre for Genetic Engineering and Biotechnology, New Delhi, is a well-known Plant Biologist who is recognized for his contributions in research and teaching in the field of Molecular Plant Physiology and Plant Biotechnology.

He obtained Ph.D. from the University of Delhi. He is a visiting scientist at Max-Planck-Institute, Kolen, and University of Munich, in Germany, and at the University of Texas, Austin and United States Department of Agriculture, Maryland, USA.

Prof. Sopory is one of the pioneers in the country for adapting genetic engineering technologies for the improvement of plant productivity. He has published over 175 papers and over 50 book chapters and co-edited 8 books.

Prof. Sopory has received numerous awards and distinctions including Chakravorty Award, Indian Science Congress, 1986 (given by the Vice-President of India); Shanti Swaroop Bhatnagar Award, (CSIR) 1987 (given by The Prime Minister of India); Fellow, Indian Academy of Sciences, Bangalore, 1992; Fellow, Indian National Science Academy, Delhi, 1992; Fellow, National Academy of Sciences, Allahabad, 1994; Birbal Sahni Medal, Indian Botanical Society, 2001; Fellow, National Academy of Agricultural Sciences, 2002; Tenth Godnev Award lecture of the Belarus Academy of Sciences, 2003; Vice-President, Indian National Science Academy, 2004-2006; Birbal Sahni Centenary Gold Medal Award for Life Time Achievement in Plant Sciences, Indian Science Congress Association, 2005 (given by the Prime Minister of India); Fellow, The World Academy of Sciences (Trieste), 2005; Padmashree, 2007, given by the President of India.

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