Trends in Plant Tissue Culture and Biotechnology
Trends in Plant Tissue Culture and Biotechnology

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Plant Cell and tissue Culture has become major tool in the study of an increasing number of fundamental and applied programmes in the Plant science. Its increasing use to investigate Cell and Developmental Biology, Biochemistry, Physiology, Genetics and Molecular Biology is providing new knowledge about fundamental characteristic of plants. Furthermore, it has become an integral part of Plant Biotechnology research as scientists in various universities, research institutions and number of private companies pursue the development of improved plants for agriculture, horticulture and forestry.

The National symposium on recent advances in Plant Tissue Culture and Biotechnology was held in December 1994 at the University of Rajasthan, Jaipur to provide a comprehensive national forum for discussion of the latest developments in this rapidly growing field. More than 300 participants attending the symposium from various universities, research institutes and companies from all over the country provided clear evidence that research in this field has expanded rapidly in the last about two decades. A total of 70 scientific papers and more than 150 posters covering virtually all aspects of current research in the field were presented. The number of developments reported in these presentations and the chapters in this volume clearly indicate that the technology is moving forward on a broad front. Of particular significance has been the development of gene transfer technology and the rapidly expanding investigation of the molecular biology of plants in the recent years.

The content of this volume reflects the organization of the symposium which was divided into broad subjects areas. These subjects were discussed at length in concurrent sessions. The chapters in the volume were written by leading experts in the field. Some of the chapters will provide the reader with a broad review of recent developments and progress in the field of tissue culture. It is hoped that the wide range of authoritative reviews and views presented by the authors in this volume will provide a useful and exciting stimulus to researchers and students in the field.

The generous financial support given to the symposium by University Grants Commission of India, Department of Science, and Technology, New Delhi, Department of Biotechnology and Council of Scientific and Industrial Research, New Delhi, as well as Department of Science and Technology Govt. of Rajasthan, is gratefully acknowledged. This support was especially instrumental in assisting many students and scientists to attend the symposium.

The enthusiastic participation and the devoted and detailed attention to organizing the symposium by many faculty members, post-graduate students and post-doctoral fellows in the Department of Botany, University of Rajasthan, are gratefully acknowledged. Without their generous help the symposium would not have been a success. In the last, I would like to express my gratefulness to Dr. C. R. Bhatia, the then Secretary, Department of Biotechnology, Government of India, New Delhi, Professor P. R. Shewry, Director Long
Ashton Research Station, Bristol, U. K. and Professor S. C. Maheshwari Department of Botany and Plant Molecular Biology, University of Delhi who very kindly agreed to participate in this symposium and contributed their valuable research findings.

I also take this opportunity to express my deep sense of gratitude and profound regards to my teacher Professor Naresh Chandra whose valuable guidance imparted me the basic training of plant tissue culture in early seventies and this inspired me to organize this symposium on the occasion of his 60th birth day, and to publish the present volume.

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Plant tissue culture may be applied for this purpose. In vitro germplasm storage collection provides a cost effective alternative to growing plants under field conditions, nurseries or greenhouses. Furthermore, the cryopreservation of cells and tissue, revival of these tissue and regeneration of plants from tissue through tissue culture technique really effective in conservation biotechnology. Cryopreservation involves storage of cells, tissues, etc. at a very low temperature using liquid nitrogen. Related Articles: Applications of Tissue Culture: 5 Applications. Applications of Plant Tissue C... Plant genetic transformation has become an important biotechnology tool for the improvement of many crops. A solid foundation for the fast development and implementation of biotechnology in agriculture was provided by achievements in plant tissue culture. On the 30th anniversary of plant transformation, I report the advancements, recent challenges and shifts in methodology of transformation. The main focus of this paper will be on conventional and novel approaches for genetic improvements of soy-bean, cotton and corn. I will also highlight results on the transformation of these crops that ha... Plant tissue culture has revolutionized the field of plant biotechnology. However, there are certain obstacles which overall restrain the output of the plant tissue culturing. One of them is contamination of the tissue culture stock which is a major problem limiting the output. Aegle marmelos (L.) is a medicinal plant whose genotype qualities are maintained through clonal propagation of nodal segment as an explant. It harbors plethora of fungi which curbs the successful in vitro propagation. Chemical fungicide like bavistin is used to prevent the contamination in tissue culture which raises th
BBT-26 Trends in Biotechnology II + Genetic Engineering and r DNA Technology. 3 50 3 50. BBT-27 Biotechnology of crop improvement + Industrial Biotechnology. Unit-V Plant secondary metabolites and their production. Hairy root culture for production of useful metabolites. Applications of plants biotechnology in breeding and crop improvement. Application of animal cells cultures for studies of gene expression. BBT - 20 Trends in Biotechnology (Theory). Min. pass marks: 18. Unit- III Application of plant tissue culture in forestry for fuel wood, forage, timber and pulp wood improvement. Biotechnology for Nitrogen fixation & plant productivity. Diazotrophic microorganisms. Biological nitrogen fixation, Asymbiotic nitrogen fixation, Symbiotic nitrogen fixation. Plant genetic transformation has become an important biotechnology tool for the improvement of many crops. A solid foundation for the fast development and implementation of biotechnology in agri-culture was provided by achievements in plant tissue culture. On the 30th anniversary of plant transformation, I report the advancements, recent challenges and shifts in methodology of transformation. The main focus of this paper will be on conventional and novel approaches for genetic improvements of soy-bean, cotton and corn. I will also highlight results on the transformation of these crops that have revolutionized the field of plant biotechnology. However, there are certain obstacles which overall restrain the output of the plant tissue culturing. One of them is contamination of the tissue culture stock which is a major problem limiting the output. Aegle marmelos (L.) is a medicinal plant whose genotype qualities are maintained through clonal propagation of nodal segment as an explant. It harbors plethora of fungi which curbs the successful in vitro propagation. Chemical fungicide like Bavistin is used to prevent the contamination in tissue culture which raises th