

Preface

In recent years, Plant Biotechnology has made tremendous progress and enjoyed a previously unknown level of public awareness. Now, Plant Tissue Culture is a major tool that is applied in Plant Biotechnology. Advances made in Genetic Engineering and Molecular Biology can be made to manifest in plants through the application of various techniques developed in the field of Plant Tissue Culture. Many of the crop plants regarded as recalcitrant are now amenable to regeneration *in vitro* using cultured protoplasts, cells and callus, thus each of them can be used as a tool in plant genetic manipulation. Considerable progress has been made in understanding the basic aspects such as cell culture, cellular totipotency, somatic embryogenesis, haploids and somaclonal variations. The application of plant biotechnology in agriculture, horticulture, floriculture, mediculture and conservation of endangered, endemic, threatened and depleting natural genetic resources has been the focal point of research and teaching over the past two decades.

Biotechnology courses have been incorporated in the syllabi of many undergraduate, postgraduate and professional courses. In order to understand Plant Biotechnology, it is indispensable for a student to learn the basic laboratory protocols on Plant Tissue Culture. The aim of this book "Plant Tissue Culture - Protocols in Plant Biotechnology" is to provide sound knowledge on practical aspects of Plant Biotechnology. The protocols elucidated in the book are developed in the Plant Biotechnology Unit, Bangalore University and is very much useful for students, teachers and researchers.

The exercises in this book are divided into four parts. Part I comprises ten exercises dealing with basic practical aspects of Plant Tissue Culture such as laboratory organization, equipments and instruments, sterilization, tissue culture media, hardening and acclimatization, *ex vitro* rooting, histochemical techniques, statistical analysis and photographic methods. In addition to standard protocols, Part II and III comprises exercises dealing with the propagation and crop

improvement techniques that have been formulated in "Plant Biotechnology Unit". Part IV is exclusively for commercial tissue culture, which has one exercise dealing with cost reduction.

Each exercise in this book is profusely illustrated with original photographs. The protocols discussed are all original contributions and reproducible. Therefore, this book would be very useful for colleges, universities, research centres and commercial laboratories.

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