

Read Free Micropropagation Of  
Orchids

# Micropropagation Of Orchids

*Chlorophyll presents an  
authoritative and  
comprehensive overview of  
the biology, biochemistry*

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*and chemistry of chlorophylls in photosynthetic organisms. Divided into seven discreet parts, the book covers topics on basic science and applied*

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*technology of chlorophyll molecules. Chlorophyll provides an insight into future developments in each field and extensive bibliography. It will be an essential resource for*

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*researchers and academic and industry professionals in the natural pigment field.*

*Orchid Biotechnology IV presents a series of recent work on both basic*

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*and applied researches in biotechnology progress for Phalaenopsis, Oncidium and Erycina pusila orchids. These include breeding of Phalaenopsis orchids of black flower, big-white*

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*flower and small and  
floriferous flowers,  
physiology for shipping  
and photosynthesis, SSR  
markers and mitochondrial  
DNA markers, virus  
detection and antiviral*

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*immunity, embryogenesis and relationship with mycorrhiza symbiosis, transposon and retrotransposon, orchid genome and evolution, regulation of orchid*

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*floral scent, floral color modification, and abiotic stress tolerance. The diversity and specialization in orchid floral morphology have fascinated botanists and*



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*collectors for centuries. The orchid industry has been growing substantially worldwide. To advance the orchid industry, enhancement of basic research as well as*

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*advanced biotechnology will provide a good platform to improve the flower quality and the breeding of new varieties. This book provides a first-hand and up-to-date*

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*information on orchid breeding, orchid genome evolution, detection of virus in nanotechnology, molecular markers for cultivar identification for orchid lovers,*

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*researchers and industry growers.*

*Over the past decade, progress in plant science and molecular technologies has grown considerably. This book focuses on plant*

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*biotechnology applications specializing in certain aspects of breeding and molecular marker-assisted selection processes, omic strategies, usage of bioinformatic tools, and*

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*nanotechnological improvements in agricultural sciences. Most farmers and breeders can no longer simply turn to the older strategies, and new instructions are*

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*needed to adapt their systems to achieve their production goals. The book covers new information on using metabolomics and nanotechnology in agriculture. In these*

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*circumstances, all new data and technology are very important in plant science. The topics in this book are practical and user-friendly. They allow practitioners,*



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*students, and academicians with specific background knowledge to feel confident about the principles presented on a new generation of molecular plant*

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*biotechnology applications.*

*This book on "Orchid Biology: Recent Trends & Challenges" reviews the latest strategies for the preservation and*

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*conservation of orchid diversity and orchid germplasm. It is an outcome of the Proceedings of the International Symposium on "Biodiversity of Medicinal Plants &*

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*Orchids: Emerging Trends and Challenges” held on 9-11 February 2018 at Acharya Nagarjuna University, India. In addition, eminent orchid experts from around the*

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*globe were invited to contribute to this book. All chapters were peer-reviewed by international experts. The Orchidaceae are one of the largest families of flowering*

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*plants, comprising over 700 genera and 22,500 species and contributing roughly 40 percent of monocotyledons. They also represent the second-largest flowering plant*

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*family in India, with 1,141 species in 166 genera, and contribute roughly 10% of Indian flora. Orchids comprise a unique group of plants and their flowers are among*

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*the most enchanting and exquisite creations of nature. Phylogenetically and taxonomically, the Orchidaceae are considered to be a highly evolved family among angiosperms.*



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*They show incredible diversity in terms of the shape, size and colour of their flowers, and are of great commercial importance in floriculture markets around the globe.*

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*Millions of cut flowers of Cymbidium, Dendrobium, Cattleya, Paphiopedilum, Phalaenopsis, Vanda etc., besides potted orchid plants, are sold in Western Countries and*

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*thus, the orchid cut flower industry has now become a multimillion-dollar business in Europe, the USA and South East Asia. Besides their ornamental value, orchids*

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*hold tremendous pharmaceutical potential. Root tubers of Habenaria edgeworthii form an important component of the 'Astavarga' group of drugs in Ayurvedic medicine. It*

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*is an established fact that tubers of some terrestrial orchids have been used to treat diarrhoea, dysentery, intestinal disorders, cough, cold and*

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*tuberculosis. Some orchids, particularly those belonging to the genera Aerides, Arachnis, Cattleya, Cymbidium, Dendrobium, Epidendrum, Oncidium, Paphiopedilum,*

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*Phalaenopsis, Renanthera, Vanda etc. have been extensively used to produce internationally acclaimed hybrids. Yet paradoxically, Indian orchids are victims of*

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*their own beauty and popularity. As a result, their natural populations have been declining rapidly because of unbridled commercial exploitation in India and*



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*abroad. In fact, some orchids are now at the verge of extinction, e.g. Renanthera imschootiana, Diplomeris hirsuta, Paphiopedilum fairrieanum, Cypripedium elegans,*

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*Taeniophylum andamanicum* etc. Given the global importance of orchids in terms of securing human health and wealth, this comprehensive compilation, prepared by international

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*experts, is highly topical. Its content is divided into five main sections: (I) Cryopreservation & Biotechnology, (II) Orchid Biodiversity &*

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*Conservation, (III)  
Anatomy & Physiology, (IV)  
Pollination Biology and  
(V) Orchid Chemicals &  
Bioactive Compounds. All  
contributions were written  
by eminent orchid*

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*experts/professors from around the world, making the book a valuable reference guide for all researchers, teachers, orchid enthusiasts, orchid growers and students of*

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*biotechnology, botany, pharmaceutical sciences and ethnomedicine. It will be equally valuable for readers from the horticultural industry, especially the orchid*

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*industry, agricultural scientists and policymakers.*

*Micropropagation of Orchids, 2 Volume Set Wiley-Blackwell*

*Modern Applications of*

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*Plant Biotechnology in Pharmaceutical Sciences explores advanced techniques in plant biotechnology, their applications to pharmaceutical sciences,*



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*and how these methods can lead to more effective, safe, and affordable drugs. The book covers modern approaches in a practical, step-by-step manner, and includes*

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*illustrations, examples, and case studies to enhance understanding. Key topics include plant-made pharmaceuticals, classical and non-classical techniques for secondary*

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*metabolite production in plant cell culture and their relevance to pharmaceutical science, edible vaccines, novel delivery systems for plant-based products,*

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*international industry regulatory guidelines, and more. Readers will find the book to be a comprehensive and valuable resource for the study of modern plant biotechnology*

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*approaches and their pharmaceutical applications. Builds upon the basic concepts of cell and plant tissue culture and recombinant DNA technology to better*

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*illustrate the modern and potential applications of plant biotechnology to the pharmaceutical sciences  
Provides detailed yet practical coverage of complex techniques, such*

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*as micropropagation, gene transfer, and biosynthesis Examines critical issues of international importance and offers real-life examples and potential solutions*

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*The Physiology of Tropical Orchids in Relation to the Industry*

*Orchid Propagation: From Laboratories to Greenhouses—Methods and Protocols*



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[Orchid Biotechnology Iii](#)  
[An Efficient](#)  
[Multiplication Protocol](#)  
[Micropropagation](#)  
[The Comprehensive Guide to](#)  
[Cultivating Local Species](#)  
[Light Emitting Diodes for](#)

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***The orchid family is one of the largest families of flowering***

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*plants known for their beauty and economic importance. This work provides information in key areas of research that are important to both scientists and commercial growers alike. The main purposes of this*

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***book are to provide key practical areas of research, such as, germination, micropropagation, traditional and current techniques related to plant improvement; document methods that ensure survival of plants from***

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***laboratories to greenhouses; promote communication between scientists and growers, so that their combined expertise on these areas will lead to the successful growth of orchids in their natural habitats or***

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***commercial greenhouses. This book can serve as reference for laymen with an interest in orchid growing. This book is divided into 5 parts. The first part emphasizes propagation methods using seeds and related techniques that are***

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***important to plant conservation and improvement. Successes in asymbiotic and symbiotic seed germination are keys to orchid conservation and their propagation. The second part summarizes micropropagation***

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*methods, common media, and newer methods of micropropagation such as the bioreactor culture procedures. The third part focuses on techniques related to the manipulation of explants in an in vitro environment. The*



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***fourth part covers cell biological methods and transformation techniques. Since the successes in a laboratory setting do not guarantee plant survival and propagation in greenhouses and in the natural***

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*environment, it discusses greenhouse propagation techniques that are essential to the survival of plants generated from a laboratory setting. The fifth part showcases recent successes on orchid propagation by*

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***documenting sample publications and how to present orchids in an artistic fashion for one's enjoyment. With more than 30,000 known species, orchids represent the largest family of plants. But only one genus has***

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*agricultural value—the Vanilla orchid. Leading orchid expert Ken Cameron covers the natural history of the world's most popular flavor and fragrance and provides an introduction to the pollination, biology, structure,*

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*evolution, and diversity of Vanilla and related orchids. Vanilla Orchids also features methods for bean harvest, curing, and processing for enthusiasts who want to try it at home. Micropropagation is a*

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***technology that has developed within the past 30 years. Earlier overviews of plant tissue culture have reviewed micropropagation as just one of many tissue culture procedures in use. Since the applications of this***

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***technology have multiplied so rapidly in recent years, we decided that a specific overview of the technology was now appropriate Our book begins with a review of the general principles of tissue culture as applied to***

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***micropropagation. This review is concise since the general topic has been covered in numerous other books and reviews. The basic principles of laboratory design and construction are summarized in the second chapter.***



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***Common problems encountered in micropropagation, both during and after culture, are examined in detail in four chapters. As micropropagation developed from a laboratory curiosity to***

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***a commercial industry, different considerations became important. These are discussed in two chapters. An attempt has been made to assess the current status of commercial production around the world. This has***

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***been difficult because commercial production figures are often closely guarded and little has been done to collect statistics on this growing industry. Applications to a broad range of crops are discussed in a***

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*series of chapters. These try to report the state of the art in each area, but since applications for some crops are much more advanced than for others, the focus of these chapters varies depending upon the progress that has*

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*been made.*

*An accessible, comprehensive and beautifully illustrated guide--the only one to cover all the orchids found in Britain and Ireland Covering more than fifty species as well as hybrids and variants, this is*

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*an engaging, intuitive and in-depth identification guide to all the orchids of Britain and Ireland at all stages of development, from first emergence through to setting seed. Drawing on the authors' extensive field experience and*

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*the latest scientific research, Britain's Orchids uses multiple techniques to help both beginner and more advanced orchid enthusiasts to identify even the trickiest plants. The book is beautifully illustrated with plates by*

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*talented artist Sarah Stribbling as well as more than 1,000 detailed, instructive and evocative photographs by the authors. Orchids have long fired the imagination with their beauty and rarity. This book aims to*



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***ignite or increase your passion for these special plants and for the conservation of their habitats, from remote mountaintops to urban wild spaces. The first book to cover all the species, subspecies and varieties, as***

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*well as hybrids, at all stages of development Lavishly illustrated with close to 100 stunning plates drawn to scale to show key identification features and more than 1,000 stunning photo showing orchids in their natural*

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***settings Simple, step-by-step system for identifying almost any orchid Up-to-date distribution maps and seasonal charts showing when each species can be seen in its various stages Special-feature identification keys that can be***

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***used on difficult plants  
This action plan chronicles  
the threats faced by wild  
orchids, but more importantly  
to critical habitats that host  
extraordinarily high orchid  
diversity and endemism. It  
explores and recommends***

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***specific ways that national and local government, legislators, scientists and orchid conservationists as well as growers can all help to reverse present trends. The facts and viewpoints presented in this***

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***comprehensive document update and supplement the information available to conservation organizations and agencies through the world so that they can lobby their appropriate government offices more effectively.***

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***The study of in-vitro micropropagation has assumed enormous importance with the tremendous pace of progress in different disciplines of biological sciences. The tissue culture will play an important***

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*role in solving the problems of conventional methods for propagation, hybridization, embryo rescue, production of secondary metabolites, production of virus free plants and paternity disputes. This book help the orchid grower*



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***to keep themselves abreast of the latest developments along with methods of mass propagation through various explants as well as conservation of endangered and rare orchids. This book also provide the technique for***

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*horticulturist those carries commercial purpose. This book will cater to the immediate needs of students, researcher, faculty members and horticultural industries.*

**[Micropropagation of Orchids, 2 Volume Set](#)**

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**[Vanilla Orchids](#)**  
**[Studies on Micropropagation of Some Orchids](#)**  
**[Plant Tissue Culture Manual - Supplement 7](#)**  
**[How to Grow Native Orchids in Gardens Large and Small](#)**

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Vanilla Planifolia](#)**

**[Micropropagation of Orchids  
Through Leaf Segments](#)**

**[Studies on Micropropagation  
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Cattleya Hybrids](#)**

**[An Introduction to](#)**

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## **Micropropagation**

Plant tissue culture has a long history, dating back to the work of Gottlieb Haberlandt and others at the end of the 19th century, but the associated concepts and techniques have reached a level

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of usefulness and application which has never been greater. The technical innovations have given new insights into fundamental aspects of plant differentiation and development, and have paved the way to the

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identification of strategies for the genetic manipulation of plants. It is the aim of this manual to deliver a broad range of these techniques in a form which is accessible to students and research scientists of diverse

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backgrounds, including those with little or no previous experience. The themes of the manual aim to reflect those research areas which have been advanced by tissue culture technology. As was the case for



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the sister volume Plant Molecular Biology Manual, the objective has been from the start to produce a manual which is at home on the laboratory bench. The plastic-covered, ring-bound format has proved to be most

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popular and is retained here. Equally, the emphasis has been on producing a collection of detailed step-by-step protocols, each supplemented with an introductory text and practical footnotes, to provide the next

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best thing to a supervisor at one's shoulder.

NEW YORK TIMES BESTSELLER

• A NEW YORK TIMES NOTABLE BOOK A modern classic of personal journalism, *The Orchid Thief* is Susan Orlean's wickedly

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funny, elegant, and captivating tale of an amazing obsession. Determined to clone an endangered flower—the rare ghost orchid *Polyrrhiza lindenii*—a deeply eccentric and oddly attractive man named John

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Laroche leads Orlean on an unforgettable tour of America's strange flower-selling subculture, through Florida's swamps and beyond, along with the Seminoles who help him and the forces of justice who fight

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him. In the end, Orlean—and the reader—will have more respect for underdog determination and a powerful new definition of passion. In this new edition, coming fifteen years after its initial publication and twenty

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years after she first met the "orchid thief," Orlean revisits this unforgettable world, and the route by which it was brought to the screen in the film *Adaptation*, in a new retrospective essay. Look for special features inside.

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Join the Random House Reader's Circle for author chats and more. Praise for *The Orchid Thief* "Stylishly written, whimsical yet sophisticated, quirkily detailed and full of empathy . . . *The Orchid Thief*



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shows [Orlean's] gifts in full bloom."—The New York Times Book Review "Fascinating . . . an engrossing journey [full] of theft, hatred, greed, jealousy, madness, and backstabbing."—Los Angeles

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Times "Orlean's snapshot-vivid, pitch-perfect prose . . . is fast becoming one of our national treasures."—The Washington Post Book World "Orlean's gifts [are] her ear for the self-skewing dialogue, her eye for the

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incongruous, convincing detail, and her Didion-like deftness in description."—Boston Sunday Globe "A swashbuckling piece of reporting that celebrates some virtues that made America great."—The Wall Street Journal

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This book presents a comprehensive treatise on the advances in the use of light-emitting diodes (LEDs) for sustainable crop production and describes the latest photomorphogenesis research

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findings. It introduces readers to the fundamentals and design features of LEDs applicable for plant growth and development and illustrates their advantages over the traditional lighting systems, including cost

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analyses. Further, it discusses a wide range of applications covering diverse areas of plant sciences relevant to controlled environment agriculture and in vitro plant morphogenesis. The chapters have been written by a

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team of pioneering international experts, who have made significant contributions to this emerging interdisciplinary field. The book will serve a valuable resource for graduate students, instructors, and researchers in

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the fields of horticulture, agricultural biotechnology, cell and developmental biology, and precision agriculture. It will also serve well professionals engaged in greenhouse and vertical farming.



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Eighty-eight lavishly illustrated pages of coloured drawings and photographs explain everything from selecting the right kit, through to planting your own seed-raised plants in the greenhouse, teaching you step-

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by-step how to grow orchids confidently, successfully and professionally. Written for the amateur and the professional without access to sophisticated laboratory equipment and chemicals, Growing Orchids

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from Seed contains all you need to know to become an expert. A great fascination for biologists, the study of embryo development provides indispensable information concerning the origins of the

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various forms and structures that make up an organism, and our ever-increasing knowledge gained through the study of plant embryology promises to lead to the development of numerous useful applications. In Plant

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Embryo Culture: Methods and Protocols, expert researchers from the field provide a ready source of information for culturing zygotic embryos for different types of studies, both theoretical and practical. The

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book's main sections examine a wide range of related topics, including the culture of zygotic embryos for developmental studies, the application of embryo culture techniques focusing on embryo rescue

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methods, cryopreservation of zygotic embryos, the use of zygotic embryos as explants for somatic embryogenesis and organogenesis, as well as transformation protocols using zygotic embryos as starting

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material. Written in the highly successful Methods in Molecular Biology™ series format, the detailed chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-



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step, readily reproducible laboratory protocols, and vital notes on troubleshooting and avoiding known pitfalls.

Authoritative and convenient, *Plant Embryo Culture: Methods and Protocols* serves as a key

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reference that can be used by scientists of all backgrounds to help develop their own customized methods for many different species and for a variety of purposes.

Orchids account for a large

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share of global floriculture trade both as cut flowers and as potted plants, and are estimated to comprise around 10% of international fresh cut flower trade. The average value of fresh cut orchids and buds trade

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during 2007-2012 was US\$ 483 million. In 2012, there are more than 40 countries exporting orchids and 60 countries importing orchids around the world, with the total size of the global trade equaling US\$ 504

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million. In India, about 1350 species belonging to 186 genera represent approximately 5.98% of the world orchid flora and 6.83% of the flowering plants in India. The publication on "Commercial Orchids" is

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presented in 15 interesting chapters vividly highlighting the global orchid industry, biodiversity, conservation and bio-piracy of genetic resources, morphological and molecular characterization of valuable

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species, breeding approaches for improved genotypes, production of quality planting materials, physiology of tropical and temperate orchids, climate change and its impact on orchid productivity, production

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technology of commercial epiphytic orchids for cut flower, production technology of commercial terrestrial orchids for cut flower, orchids for pot culture, hanging baskets and tree mounting, medicinal and



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aromatic orchids, post-harvest management of cut flowers of commercial orchids, value addition and marketing.

[Tissue Culture as a Plant Production System for Horticultural Crops](#)

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[Orchid Biotechnology Iv](#)

[Handbook of Vanilla Science and Technology](#)

[A Field Guide to the Orchids of Great Britain and Ireland](#)

[Modern Applications of Plant Biotechnology in Pharmaceutical](#)

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[Sciences](#)

[Orchids](#)

[Fundamentals of Orchid Biology  
Second Edition](#)

[The Genera and Species of  
Orchidaceous Plants  
Britain's Orchids](#)

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**Divided into three volumes, Micropropagation of Orchids Third Edition retains the exhaustive list of micropropagation protocols for many genera and updates each section to include new**

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**and/or revised information about: Culture media and vessels Techniques and procedures for both orchids which were previously cultured and for those which were not Plant hormones and**

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**growth regulators Media components Methods for tissue decontamination Historical information Procedures for the cultivation for plantlets which have been removed from flasks Sources**

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**of light and illumination methods** Written by two globally acknowledged experts in the field, the third edition of this definitive text on the micropropagation of orchids is a detailed and

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**comprehensive collection of procedures and methods for multiplying orchids, including organ, tissue, and cell culture techniques in vitro and is intended for researchers in plant science and**



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**propagation, professional and amateur orchid growers, and plant breeding professionals. Much of the general information about techniques and procedures can be applied to plants other than**

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**orchids.**

**Orchid Biotechnology II presents a series of recent works on both basic and applied researches in biotechnology progress for Phalaenopsis and Oncidium**

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**orchids. These include the development of flower, ovule, gynostemium and perianth, the discovery of new orchid-infecting viruses and virus movement, secondary metabolites, technology of**

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**DNA endoduplication and genetic transformation, growth regulation by micronutrition and orchid mycorrhiza, and plant growth substances for flowering. The diversity and specialization in**

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**orchid floral morphology have fascinated botanists and collectors for centuries. The orchid industry has been growing substantially in the past ten years worldwide. This book focuses on the recent**

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**advances in the research of orchid biotechnology from the past ten years in Taiwan. To advance the orchid industry, enhancement of basic research as well as advanced biotechnology will provide a**

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**good platform to improve flower quality and breeding of new varieties.**

**This greatly expanded and updated edition of a classic reference work comprises two volumes offering a**

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**compendium of methods for multiplying orchids through micropropagation. A detailed collection of procedures and methods for multiplying orchids, including organ, tissue, and cell culture**



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**techniques in vitro Presents classic techniques that have been in the forefront of orchid propagation since they were first developed in 1949 Detailed procedures are appended with tables and**

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**complete recipes for a large number of culture media  
Includes many illustrations, chemical formulas, historical vignettes, and seldom seen illustrations of people, orchids, apparatus and tools**

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**“... an excellent resource like its predecessor, ...both informative and captivating, and served as a reminder of why we go to such extremes in our quest to propagate these plants.” American**

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**Orchid Society, 2009 “...in the sense of its universal value and importance, this Second Edition will undoubtedly be considered a classic, if only because it will serve as a sole and invaluable resource on**

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**the subject.” Plant Science Bulletin, 2009**

**Over the past ten years, the orchid industry has been growing at a steady pace in South-East Asia and East Asia. In some Asian countries,**

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**orchids have become an essential export item. To maintain this progress, there is an urgent need for a book that will help the region's orchid growers in improving their cultivation and**

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**management skills, and guide new students in understanding orchid physiology. This book provides a comprehensive description of tropical orchid physiology relevant to**

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**commercial growers, research workers and graduate students. An integrated and unifying theme of tropical orchid physiology, with a clearly written factual text as well as illustrations, is**



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**presented over nine chapters. Each chapter is designed to provide comprehensive and up-to-date information on a particular aspect of orchid physiology. This book complements the existing**

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**scientific literature available for improving orchid cultivation and setting a new research agenda, especially in the tropics.**

**Focusing on the cultivation of orchids in greenhouses, pots**

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**and gardens, a well-researched and practical step-by-step guide highlights more than 150 species of hardy orchids in North America, Europe and Australia that will thrive in temperate climates**

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**with little or no protection.**

**Original.**

**An updated guide to the production, science, and uses of vanilla Vanilla is a flavor and fragrance in foods, cosmetics, pharmaceuticals,**

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**and a wealth of other products. Now in its second edition, the Handbook of Vanilla Science and Technology provides a comprehensive and updated review of the science and**

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**technology used in these items' production and supply. Featuring contributions from an international range of experts, this revised edition covers a multitude of topics, including agricultural**

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**production, global markets, analytical methods, sensory analysis, food and fragrance applications, organic farming and fair trade, botanical diseases, and novel uses. The Handbook of Vanilla Science**

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**and Technology, Second Edition is a vital resource for producers, distributors, and scientists involved in vanilla's growth and utilization, and offers readers: A guide to the cultivation, extraction,**



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**analysis, DNA sequencing, and marketing of vanilla**  
**Information on the production of vanilla in a range of countries such as Mexico, Australia, Costa Rica, and India**  
**Guidelines on the quality**

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**control of vanilla beans and  
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**Obsession**

**Technology and Application**

**New Visions in Plant Science**

**Growing Orchids from Seed**

**Plant Cell Culture in Crop**

**Improvement**

**Methods and Protocols**

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## Status Survey and Conservation Action Plan Micropropagation of Orchid Esmeralda Clarkei

*High-efficiency micropropagation, with relatively low labour costs,*

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***has been demonstrated in this unique book detailing liquid media systems for plant tissue culture. World authorities (e.g. von Arnold, Curtis, Takayama, Ziv) contribute seminal papers together with papers from***

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***researchers across Europe that are members of the EU COST Action 843 "Advanced micropropagation systems". First-hand practical applications are detailed for crops - including ornamentals and trees - using a wide***

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***range of techniques, from thin-film temporary immersion systems to more traditional aerated bioreactors with many types of explant - shoots to somatic embryos. The accounts are realistic, balanced and***

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***provide a contemporary account of this important aspect of mass propagation. This book is essential reading for all those in commercial micropropagation labs, as well as researchers worldwide who are keen to improve***



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***propagation techniques and lower economic costs of production. Undergraduate and postgraduate students in the applied plant sciences and horticulture will find the book an enlightened treatise. Acclaimed as the most***

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***practical guide to plant tissue culture, the book is now even better and introduces new developments in biotechnology, such as genetic engineering and cell culture.***

***This greatly expanded and***

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***updated edition of a classic reference work comprises two volumes offering a compendium of methods for multiplying orchids through micropropagation. A detailed collection of procedures and methods for multiplying***

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***orchids, including organ, tissue, and cell culture techniques in vitro Presents classic techniques that have been in the forefront of orchid propagation since they were first developed in 1949 Detailed procedures are***

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***appended with tables and complete recipes for a large number of culture media Includes many illustrations, chemical formulas, historical vignettes, and seldom seen illustrations of people, orchids, apparatus and tools***

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***“... an excellent resource like its predecessor, ...both informative and captivating, and served as a reminder of why we go to such extremes in our quest to propagate these plants.” American Orchid Society, 2009 “...in the***

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***sense of its universal value and importance, this Second Edition will undoubtedly be considered a classic, if only because it will serve as a sole and invaluable resource on the subject.” Plant Science Bulletin, 2009***

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***This book provides a first hand and complete information on orchid biotechnology for orchid lovers, graduate students, researchers and industry growers. It contains comprehensive genomics and***



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***transcriptomics data, and a thorough discussion of the molecular mechanism of orchid floral morphogenesis. The contributors to the book are all orchid enthusiasts with more than 20 years' experience in the field. With***

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***more than 25,000 species, orchids are the most species-rich of all angiosperm families. They show wide diversity of epiphytic and terrestrial growth forms and have successfully colonized almost every habitat on***

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***earth. Orchids are fantastic for their spectacular flowers with highly evolved petal, labellum, and fused androecium and gynoecium, gynostemium, to attract pollinators for effective pollination. In addition,***

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***orchids have attracted the interest of many evolutionary biologists due to their highly specialized evolution and adaptation strategies. Orchid Biotechnology III covers the most update knowledge of orchid biotechnology research***

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***on Phalaenopsis, Oncidium, Cymbidium, Anoectohilus, Paphiopedilum, and Erycina pusilla. It will provide graduate students, researchers, orchid lovers and breeders with an opportunity to understand the mechanism***

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***why the orchids are so mysterious and spectacular. Hopefully, this information will be helpful for breeders to enhance orchid breeding and create even more elegant and grace flowers. The current and potential***

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***importance of plant tissue culture techniques in crop improvement is hard to overemphasize. There are few areas where these techniques will have more possible impact than in tropical agriculture, where the***

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***availability of high productivity varieties is sadly lacking in many species. The potential for the rapid, clonal propagation of elite individuals and the use of controlled multiline planting could have a major effect on***



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***crop yield and disease resistance in many areas of the world. This volume is a collection of papers presented at the Conference on "Crop Improvement Through Tissue Culture", held at the Base Institute, Calcutta, India in***

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***December 1981. It attempts to bring together local research workers, familiar with the agricultural resources of the area and tissue culture and molecular level workers. It was the hope of the conference that the***

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***"cross fertilization" of ideas would lead to new approaches and activity in this area. The editors trust that this collection of papers will stimulate interest and research in the tissue culture and improvement of crop***

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*plants everywhere. v*

***ACKNOWLEDGEMENTS The symposium from which the papers in this book are drawn was held at Bose Institute, Calcutta on December 6 to December 10, 1981.***

***Conference on Tissue Culture***

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***as a Plant Production System  
for Horticultural Crops,  
Beltsville, MD, October 20-23,  
1985***

***Liquid Culture Systems for in  
vitro Plant Propagation  
Chlorophyll  
Orchid Biotechnology II***

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**[The Orchid Thief](#)**