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Plant Biotechnology Handbook

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About the Book

Plant biotechnology is a precise process in which scientific techniques are used to develop molecular and cellular based technologies to improve plant productivity, quality and health; to improve the quality of plant products; or to prevent, reduce or eliminate constraints to plant productivity caused by diseases, pest organisms and environmental stresses. It can be defined as human intervention on plant material by means of technological instruments in order to produce permanent effects, and includes genetic engineering and gene manipulation to obtain transgenic plants. Plant genetic engineering is used to produce new inheritable combinations by introducing external DNA to plant material in an unnatural way. The results are genetically modified plants (GMPs) or transgenic plants. The key instrument used in plant biotechnology is the plant tissue culture (PTC) technique which refers to the in vitro culture of protoplasts, cells, tissues and organs. Plant biotechnology in use today relies on advanced technology, which allows plant breeders to make precise genetic changes to impart beneficial traits to plants. The application of biotechnology in agriculture has resulted in benefits to farmers, producers and consumers. Plant biotechnology has helped make both insect pest control and weed management safer and easier while safeguarding plants against disease. The worldwide demand for food, feed and modern textile fibers can only be met in the future with the help of plant biotechnology. It has the potential to open up whole new business areas that will totally redefine the current market scope and perception.
This book majorly deals with the organisms of biotechnology, herbicide resistant plants, transgenic plants with improved storage proteins, engineering for preservation of fruits, enhancing the photosynthetic efficiency, basic requirements for nitrogen fixation, animal and plant cell cultures , insecticides, cellular characteristics which influence the choice of cell , the growth of animal and plant cells immobilized within a confining matrix, virus free clones through plant tissue culture , microbial metabolism of carbon dioxide , organisms involved in the conversion of hydrogen, hydrogen utilization by aerobic hydrogen oxidizing bacteria, overproduction of microbial metabolites, regulation of metabolite synthesis etc.
The book contains measurement of plant cell growth, plant tissue culture, initiation of embryo genesis in suspension culture, micro propagation in plants, isolation of plant DNA and many more. This is very helpful book for entrepreneurs, consultants, students, institutions, researchers etc.

Contents

1. The organisms of biotechnology
Cells - The Basic Units
Types of Microorganism

Viruses
Prokaryotes
Eukaryotes
Algae
Protozoa
Fungi
Tissue Cultures
Animal Cells
Plant Cells
2. Transgenic plants
Herbicide Resistant Plants
1. Glyphosate Tolerant Plants
2. Sulphonylurea Tolerant Plants
3. Atrazine Tolerant Plants
4. Phosphinothricin Tolerant Plants
5. Bromoxynil Tolerant Plants
Insect Resistant Plants
1. Transgenic Plants with Bt Toxin
2. Transgenic Plants with Bt Toxin and Serine Protease Inhibitor Gene
3. Transgenic Plants with Cowpea Trypsin Inhibitor
4. Transgenic Plants with Nicotiana alata Proteinase Inhibitor
Virus Resistant Plants
1. Transgenic Plants with Viral Coat Protein
2. Transgenic Plants with Viral Nucleoprotein
3. Transgenic Plants with Viral SAT RNA
4. Transgenic Plants with Antisense RNA
Transgenic Plants Resistant to Fungi and Bacteria
Transgenic Plants with Improved Storage Proteins
Sweet Proteins
Enriching the Carbohydrate Contents
Improving the Quality of Oils and Fats
Male Sterility and Fertility Restoration
Changing the Flower Colours
Stress Tolerant Plants
Cold Tolerant Plants
Drought Tolerant Plants
Plant Tolerant to High Light Intensity
Engineering for Preservation of Fruits
Enhancing the Photosynthetic Efficiency
Transgenic Plants as Bioreactors
Vaccines
Interferons
Pharmaceutical Compounds
Biodegradable Plastics
3. Biological Nitrogen fixations
Non-symbiotic Nitrogen Fixation
Features Favourable for Non-symbiotic Nitrogen Fixation
1. Special separation of Nitrogen Fixing Cells
2. Protein-Nitrogenase Association
3. High Rate of Respiration

4. Time specific Nitrogenase Activity
5. Association with Rapid Oxygen Consumers
6. Presence of hydrogenase
7. Colonization
Nitrogenase
Basic requirements for Nitrogen Fixation
Mechanism of Nitrogen Reduction
Assimilation of Ammonia
Route I

Route II
Symbiotic Nitrogen Fixation
Host Specificity
Root Nodulation
Mechanism of Nitrogen Fixation
(a) Oxygen Transpot by Leghaemoglobin
(b) Utilization of Oxygen by Hydrogenase
Nitrogenase
Requirement for Nitrogen reduction
Assimilation of Ammonia
4. Genetics of Nitrogen Fixation
Nif-genes of Klebsiella Pneumoniae
Regulation of Nif Genes
Nif-genes of Azotobacter
Nif-genes of Anabaena
Genetics of Legume-Rhizobium Nitrogen Fixation
1. Rhizobial Genes
a) Nod Genes
b) Nif Genes
c) Hup Genes
2. Legume Nodulin Genes
Leghaemoglobin Gene
Overall Regulation of Genes
Gene Transfer for Nitrogen Fixation
1. Transfer of Nif Genes to Non-Nitrogen Fixing Bacteria
2. Transfer of Nif Genes to yeasts
3. Transfer of Nif-Genes to plants
4. Transfer of Nod Genes
5. Transfer of Hup Genes
5. Mycorrhizae for Agriculture and Forestry
Mycorrhizal types and their structural and nutritional features
Ectomycorrhizae
Mechanism of ECM formation
Morphology and structure
Synthesis of mycorrhiza
Cultural study
Vesicular arbuscular Mycorrhiza
Introduction
Evolution
Taxonomy
Classification

Distribution
Lifecycle
Reproduction
Sexual reproduction
A sexual production
Method of Inoculum production of VAM
Some important steps in production of VAM
Host plant/growth medium
Fertilizations/micronutrients
Chemical application
Control of fungal pathogens
Plant vesicular arbuscular mycorrhizal fungal interactions
VAM and soil biota
Control of root diseases
Endomycorrhiza fungi and tree diseases
Mechanism of disease control
6. Animal and plant cell cultures
Historical perspectives
Products and potentials
Animal cells
Immuno biologicals
1. Virus vaccines
2. Monoclonal antibodies
3. Immunoregulator materials
Insectisides
Enzymes
Hormones
Whole cells
Plant cells
Pharmaceuticals
Food additives
Agrochemicals
Perfumes
Enzymes
Speciality Chemicals
Biomass applications of plant cell cultures
Cell culture and product synthesis
The nature of animal and plant cells in culture
Cell culture initiation
Culture development
Secondary cultures
Culture replication
Industrially useful cell cultures
Substrate independent cultures
Individuality of cell lines in relation to the productivity
Culture media
Growth media
Water
Inorganic salts
Trace elements
Vitamins

Buffers
Sources of energy and carbon
Nitrogen sources
1. Defined nitrogen sources
2. Undefined nitrogen sources
Growth factors
Other ingredients
Maintenance media
Cell culture technologies
Cellular characteristics which influence the choice of cell culture technology
Mixing
Aeration
Doubling times
1. Sterlization of media
2. Sterlization of equipment
Cell stickness
Immobilized cell systems
The growth and exploitation of cell grown on the surface of a supporting solid substratum
1. Multiple process
2. Unit process
The growth of animal and plant cells immobilized within a confining matrix
1. Gel entrapment systems
2. Applications of entrapped cells
Dynamic cell systems
Air driven systems
Impeller and air driven systems
Impeller mixed systems
7. Somaclonal variation, cell selection an genotype improvement
Somaclonal variation
Historical perspective
The manifold incidence of somaclonal variation
Range of species
Characters displaying variation
Genetic nature of somaclonal variants
Pre-existing or culture induced variation
Genetic and explant sources effects
The origin of somaclonal variation
Chromosomal abnormalities
Molecular possibilities
Gene amplification and diminution
Tranposable elements
Cell selection
Disease resistance
Herbicide tolerance
Nutritional quality
Other cell selection systems
8. Virus-free clones through plant tissue culture
Distribution of viruses in plants
Techniques for eradication

Heat treatment
Chemotherapy
Meristem culture
Culture media
Factors affecting developments and rooting
Virus eradication
Major use of virus-free clones
Study effect of virus infection
Source for clonal propagation
Source for in vitro mass propagation
Concluding remarks
9. Microbial metabolism of carbon dioxide
Autotrophic carbon dioxide fixation
The calvin cycle
Molecular structure and properties of RuBP case
Phosphoribulokinase
Carboxysomes
Regulation of ribulose 1,5-biphosphate carboxydase and phosphoribulakinase synthesis
The reductive carboxylic acid cycle
The anaerobic non-phototrophic autotrophs
Heterotrophic carbon dioxide fixation
10. Microbial metabolism of Hydrogen
Introduction
The role of Hydrogen in the biosphere
Enzyme catalysing the evolution and oxidation of Hydrogen
H2 :+ Ferredoxin Oxidoreductase
H2 : Ferricytochrome C3 oxidoreductase
H2 : NAD- Oxidoreductase
H2 : Coenzyme F420 oxidoreductase
Membrane-bound hydrogenases
Formate hydrogenlyase
Nitrogenase
Organisms involved in the conversion of hydrogen
Hydrogen-producing micro-organisms
Anaerobic conditions
1. Fermentation and fermentative bacteria
2. Anoxygenic photosynthesis and phototrophic bacteria
3. Oxygenic Phototrophic bacteria (Cyanobacteria)
4. Oxygenic green algae
Aerobic conditions : Nitrogen fixing bacteria
Hydrogen consisting organisms
Hydrogen utilization by anaerobes
1. Nitrate-reducing dentifying bacteria
2. Sulfate reducing bacteria
3. Methanogenic bacteria
4. Acetogenic bacteria
5. Furmarate-reducing bacteria
Hydrogen utilization by phototrophs
1. Anoxygenic phototrophs
2. Cyan bacteria

3. Green algae
Hydrogen utilization by aerobic hydrogen-oxidizing bacteria
The potential use of Hydrogenases and hydrogen in biotechnology
11. Microbial grwoth dynamics
Microbial growth in unlimited environments
Basic growth equation from cell number increase
Basic growth equation from increment increase in the population over a small growth time.
Basic growth equations.
Microbial growth in limited environments
Growth limitation by substrate exhaustion
Variation in the observed growth yield
Influence of the growth-limiting substrate on growth rate
Deviation of the Monod equation at High substrate concentrations
Basic growth limiting substrate equation
Modelling microbial growth in limited environments
The logistic equation
The saturation model
Microbial growth in open environments
Chemostat growth kinetics
The dilution rate
The dilution rate and biomass concentration
The dilution rate and growth limiting substrate concentration
Biomass and growth-limiting substrate concentrations in the steady state
Determination of Âµmax from washout kinetics
Establishing and maintaining the steady state
Deviations from theoritical chemostat kinetics
Influence of variation in the observed growth yield
Microbial competition
Competition in closed environments
Competition in open environments
12. Stoichiometry of microbial growth
Growth yields and material balances
Relation between ATP production and growth yields, YATP
Influence of growth rate and maintenance energy on YATP : anaerobic chemostat cultures
Aerobic yield studies and the influence of the efficiency of oxidatie phosphorylation on growth yields
Theoritical calculations on the ATP requirements for the formation of microbial biomass
Influence of Cell Composition
Influence of the carbon source and complexity of the medium
Theoritical calculations on the ATP requirement for the formation of
microbial biomass
Influence of the Nitrogen source
Influence of the carbon assimilation pathway of the growth substrate
Energy-dissipating mechanisms during growth with excess carbon and source.
Influence of the degree of reduction of the growth substrate
Heat production

The stoichiometry of product formation
13. Ageing and death in microbes
Basic principles
Death of microbes
Ageing of microbes
Viability among microbes
Survival of populations : Cryptic growth
Injury among microbes
Stress and survival
The physiological status of the population
Overt and actual stress
Starvation
Substrate accelerated death (SAD)
Metabolic and structural injury
Thymine less death
Survival of slowly growing bacteria
Differentiation and survival
14. Effect of environment on microbial activity
Mechanisms of micro-organisms response to the environment
Primary response due to direct chemical or physicochemical effects
Enzyme inhibition and stimulation
Induction and repression of protein synthesis
Changes in cell morphology
Change in genotype
Dissolved oxygen
Cell Interactions with oxygen
Respiration
Oxygen incorporation
Oxygen as an inhibitor
Oxygen as an enzyme regulator
Measurement of dissolved oxygen
Generalized response to DOT
Diffusion limitation
Response of growing micro-organisms
Respiration rate
Change in cell constituents
Changes in metabolic products
Transient responses to changes in DOT
Control of DOT
Redox potential
Responses to carbon dioxide
Requirement for carbon dioxide
Inhibition by carbon dioxide
Water activity
Introduciton
Halotolerance and halophily
Effects of pH
Introduction
Cellular level responses
Intracellular pH
Effects of pH membrane function

Effects of pH on uptake of substrate
Effects of pH on products of metabolism
Effects of pH on cell morphology an structure
Effects of pH on the chemical environment
Effects of pH on flocculation and adhesion
Optimum pH values for growth
Causes of pH changes in cultures
Product formation
Nutrient uptake
Oxidation/reduction reaction
Chage in buffering capacity
Control of pH
By means of a buffer
By balancing metabolism
By feedback control
Temperature
Cellular-level Responses
Temperature ranges for growth
Response of growth rate to temperature
Effects of temperature on cell death
Effects of temperature on cellular components
1. Membranes
2. DNA
3. RNA
4. Proteins
Cultural effects of temperature
Response to temperature shifts
Effects on substrate utilization
Effects on product formation
Heat generation
Shear
Generation of shear
Effects of shear on filamentous fungi
Effects of shear on protozoa and animal cells in culture
Effects of products on shear rate
General control strategies
15. Biosynthesis of fatty acids and lipids
Nomenclature
Relevance and importance of lipids
Lipid composition of micro-organism
General survey
Bacteria
Yeasts
Fungi
Oleaginous micro-organism
Patterns of lipid accumulation
Factors influencing lipid biosynthesis
Growth rate
Substrate
Temperature
Growth substrate

Oxygen
pH and salinity
Other factors
Lipid biosynthesis
Acetyl- CoA carboxylase
Fatty acid sythetase
Origin of acetyl - CoA
Bacteria
Eukaryotic micro-organism
Biosynthesis of unsaturated fatty acids
Biosynthesis of other fatty acids
Biosynthesis of lipids from fatty acids
Triacylglycerols
Phospholipids
Waxes
Poly ÃŸ- hydroxybutyrate
Microbial metabolism of alkanes and fatty acids
Alkane-utilizing organisms
Uptake of alkanes
Mechanisms of alkane oxidation
Oxidation of primary alcohols to fatty acids
Metabolism of fatty acids derived from alkanes
ÃŸ-oxidation
a-oxidation
Microbial products derived from alkanes
Fatty alcohols and aldehydes
Fatty acids
Surfactants
16. Microbial metabolism of aromatic compounds
Fission of the Benzene nucleus
Pereparation of nucleus for aerobic fission
Reactions which follow ring fission
Pathways of degradation
Meta fission pathways
Degradation of 4-hydroxyphenlacetic, homoproto catacleuic
Homogentistic and genetoside acids
Procalecluate 4.5 dioxygenase
Degradation of 3.0- Methylgllic acid: Biological formationof
methanol
Ortho fission pathway
Separation of pathways used for aromatic catabolism by bacteria
Catabolism of aromatic compounds in trichosporon cutaneum
Degradation of aromatic industrials pollutants and pesticides
Complete mineralization
Catabolic plasmids
Release of halogen substrates from benzen nucleus
Incomplete degradation of aromatics
17. Bacterial respiration
The generation of the proton motive force
Bacterial respiratory chains
Respiration linked proton translocation

The proton motive force
The utilization of the proton motive force
ATP synthesis
Active transport of solutes
Biotechnological aspects of bacterial respiration
Biomass production
Waste treatment and metabolite production
18. Mechanisms of enzyme catalysis
The events in an enzyme catalysed reaction
Enzyme mechanisms
Enzyme kinetics
Binding of the substrate to the enzyme
Conformational changes
Covalent bond making and breaking
Glucose isomerase
19. Enzyme evolution
Regulation of metabolism
Induction
Nutritional repression
Feedback regulation
Limiting accumulation of end products
Feedback resistance mutations
Additional types of regulations
Permeability consideration
Recent approaches to strain construction
Amino-acid production by genetically engineered strains of
E-Coli and related organisms
Strain construction in other species
20. Microbial photosynthesis
Historical background
General characteristics of microbial photosynthesis
Structure and synthesis of photosynthetic pigments
Chlorophylls and bacteriochlorophylls
Carotenoids
The phycobissins
The initial reactions primary photochemistry and electron transport
Light harvesting
Charge separation and electron transport in an oxygenic
` photosynthesis
ATP synthesis
The eubacterial photosynthetic microbes
Introduction
The anoxygenic phototrophic bacteria
The major groups
Development of the photosynthetic appartus
Carbon metabolism
The Cyano bacteria: oxygenic photosynthesis in a diverse
prokaryotic group
Organization of the photosynthetic appartus
Interrelationship between photosynthetic and
chemosynthetic carbon metabolism in cyanobacteria

21. Extra cellular enzymes
Mechanism of Secretion
Signal hypothesis
Signal hyprosthesis in bacteria
Signal sequence structure
Function of signal peptide and translocation
Processing of the precursor
Gene fusion studies
Membrane associate intermediates
Alternative export mechanisms; post translocational secretion
Aspects of enzyme secretion in fungi
Regulation of Extracellular enzyme synthesis
Regulation of protein synthesis
Induction of exoenymes
End-product repression
Catabolite repression
Patterns of exoenzyme synthesis
RNA polymerase modification
Catabolite repression
Translocational control of exoenzyme synthesis in bacteria
Control of secretion
22. Overproduction of microbial metabolites
Effects of nutrient limitation
Effects of pH and uncouplers of oxidative phosphorylation
Effects of Temperature
23. Regulation of metabolite synthesis
A phospholactase system in Klebsiella
Catabolism of unnatural sugars
Regulatory mutations
Modular pathways
Evolution of an aliphatic amidase in pseudomonas
Evolution of a new ÃŸ-Galactosidase in E-Coli
Properties of the wild-type proteins
Evolution of lactose utilization
Evolution of new activities for ebg enzymes
Evolution of the ebg repressor
Decryptifying Existing Genes

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