

Emerging Trends and Innovations in Sustainable Agriculture

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Preface

Agriculture stands at a critical crossroads, challenged by climate change, soil degradation, shrinking natural resources, and the growing demand for safe and nutritious food. In this context, sustainable agriculture has emerged not merely as an alternative approach, but as a necessity for ensuring long-term food security, environmental conservation, and socio-economic resilience. *Emerging Trends and Innovations in Sustainable Agriculture* is conceived to address these pressing global challenges by presenting contemporary scientific advancements, practical innovations, and future-oriented strategies that support sustainable farming systems.

This book brings together insights from diverse disciplines including agronomy, soil science, microbiology, biotechnology, environmental science, and agricultural economics. It highlights emerging trends such as precision agriculture, climate-smart practices, biofertilizers and biopesticides, digital and smart farming technologies, microbial and plant-based innovations, natural and organic farming approaches, and resource-efficient production systems. Special emphasis is given to eco-friendly technologies that enhance productivity while preserving soil health, biodiversity, and ecosystem services.

The chapters are designed to bridge the gap between research and practice, making complex scientific concepts accessible to students, researchers, educators, policymakers, and progressive farmers. By integrating recent research findings with real-world applications, the book aims to inspire innovative thinking and encourage the adoption of sustainable solutions tailored to diverse agro-ecological conditions.

We hope this volume will serve as a valuable reference and a source of inspiration for all stakeholders committed to building resilient, productive, and environmentally responsible agricultural systems. Ultimately, this book aspires to contribute to a sustainable future where agriculture harmonizes with nature while meeting the needs of present and future generations.

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Mr. Ujwal Virkhare
Dr. Yogendra Singh
Mr. Prajwal Nimbulkar

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CONTENTS

S. NO.		PAGE NO.
1.	Gardening in India: History, Importance and Notable Gardens <i>Pankaj Kumar Meena, Sourabh Sherawat, R T Patil, Manjula Karadiguddi and Ravi Suman</i>	1-12
2.	In-Vitro Mass Production of <i>Stevia Rebudiana</i> Through Direct Organogenesis <i>Dushyant Kumar and Vinod Sharma</i>	13-20
3.	Comparative Study of Formal vs Informal Garden Styles <i>Pankaj Kumar Meena Sourabh Sherawat, R T Patil, Manjula Karadiguddi and Naval Kishore Meena</i>	21-34
4.	Integrated Approaches for Managing Major Pests and Diseases in Fruit Orchards <i>Naval Kishore Meena, Vicky Yadav, Pujarani Rath, Anjali Siroriya, Ashish Kumar</i>	35-48
5.	Carbon Credits from Permaculture: A Pathway for Climate-Resilient and Sustainable Agri-Economies <i>Kiran Kotyal and Pooja S. Beleri</i>	49-64
6.	Modern Orchard Establishment: Designs, Spacing Systems, and Planting Geometry <i>Naval Kishore Meena, Vicky Yadav, Sourabh Sherawat, Ashish Kumar, Rajeshkumar Kishorkumar Panchal</i>	65-78
7.	Metabolomics and Quality-Trait Profiling in Horticultural Crops <i>Ashish Kumar, Vicky Yadav, Sourabh Sherawat, Naval Kishore Meena, Rajeshkumar Kishorkumar Panchal</i>	79-88
8.	Agriculture Entrepreneurship and Its Impact On Rural Developemnet and Econmic Growth in Gujarat <i>Mittal Zarkhandi</i>	89-98

9. **Recent Breakthroughs in Genomic Tools for Fruit Crop Improvement** 99-116
Ashish Kumar, Vicky Yadav, Sri Dharanidharan M, Naval Kishore Meena, Rajeshkumar Kishorkumar Panchal
10. **Climate-Smart Vegetable Production Systems Under Extreme Weather Events** 117-130
Ajay Tiwari, Soumadeep Putatunda, Natasa Dewan, Ananya Mishra, Bindiya Mukamian
11. **Effect of Sweet Flag (*Acorus Calamus* L.) Rhizome Treatment On Pest and Disease in Field Bean (*Lablab Purpureus* L.)** 131-140
Megha, B., Pooja, D
12. **Detection and Characterisation of Methyl Orange Dye in Contaminated Water Using Spectroscopic Technique** 141-150
Aditya Kumar, Monika Kundu, P. Krishnan, Ananta Vashisth
13. **Production Technology and Crop Management of Chilli** 151-160
Vikas Sagwal, Himanshu
14. **Zinc-Solubilizing Bacteria: A Sustainable Strategy for Improving Zinc Nutrition in Cereal Plants** 161-188
Ujwal Virkhare, Govind Gupta, Prajwal Nimbalkar, Yogita Chouhan, Deependra Kumar
15. **Sustainable Biocontrol of *Alternaria alternata* in Ashwagandha Using Endophytic Bacteria: An Emerging Approach** 189-202
Yogita Chauhan, Govind Gupta, Ujwal Virkhare and Prajwal Nimbalkar
16. **Methodologies Used to Remediate Heavy Metals from Soil** 203-214
Debesh Singh, Ajay Singh
17. **Role of Nano-biosensors in Soil Science** 215-226
Debesh Singh, Ajay Singh

- 18. Crop Residue Management in Conservation Agriculture** 227-238
Ajay Singh, Debesh Singh
- 19. Status and Growth of Organic Farming in the World as well as India** 239-250
Ajay Singh, Debesh Singh
- 20. Biological Control of Plant Diseases** 251-264
Tariq Ahmad Sofi, Shahnaz Anjum, Arfa Ji, Kamran Muneer, Saira Banoo, Syeda Uzma, Suhaib Shabir Bhat
- 21. Climate Change and Emerging Plant Diseases** 265-276
Shahnaz Anjum, Arfa Ji, Kamran Muneer, Saira Banoo, Syeda Uzma, Suhaib Shabir Bhat, Tariq Ahmad Sofi
- 22. Recent Innovations in Plant Health Protection** 277-290
Suhaib Shabir Bhat, Kamran Muneer, Arfa Ji, Saira Banoo, Shahnaz Anjum, Syeda Uzma, Tariq Ahmad Sofi
- 23. Soil-Borne Plant Pathogens and Control** 291-304
Kamran Muneer, Saira Banoo, Syeda Uzma, Shahnaz Anjum, Arfa Ji, Suhaib Shabir Bhat, Tariq Ahmad Sofi

