

- | | |
|-------------------------|---|
| 1. Record Nr. | UNINA990001448320403321 |
| Titolo | Semigroup of operators : theory and applications / A. V. Balakrishnam, editor |
| Pubbl/distr/stampa | Basel : Birkhauser, c2000 |
| ISBN | 3-7643-6310-X |
| Descrizione fisica | v, 367 p. ; 25 cm |
| Collana | Progress in nonlinear differential equations and their applications ; 42 |
| Disciplina | 515.724 |
| Locazione | MA1 |
| Collocazione | C-17-(42 |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
-
- | | |
|-------------------------|---|
| 2. Record Nr. | UNINA9910506389303321 |
| Autore | Bandh Suhaib A |
| Titolo | Sustainable Agriculture : Technical Progressions and Transitions |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing AG, , 2021
©2022 |
| ISBN | 3-030-83066-7 |
| Descrizione fisica | 1 online resource (262 pages) |
| Soggetti | Electronic books. |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di contenuto | Intro -- Contents -- List of Figures -- List of Tables -- Chapter 1: Understanding Sustainable Agriculture -- 1.1 Introduction -- 1.2 Global Impact of Green Revolution on the Environment -- 1.3 |

Sustainable Agriculture -- 1.3.1 Advantages -- 1.3.2 Principles of Sustainable Agriculture -- 1.3.3 Goals of Sustainable Agriculture -- 1.4 Farming Systems and Agriculture Sustainability -- 1.4.1 Principles of Farming System -- 1.4.2 Aims of Farming System -- 1.4.3 Organic Farming -- 1.4.4 Principles of Organic Farming -- 1.4.5 Relevance of Organic Farming -- 1.4.6 Precision Agriculture -- 1.4.7 Climate-Resilient Crop Varieties -- 1.4.8 Micro-Irrigation -- 1.4.9 Tillage Management for the Effectiveness of Fertilisers and Pesticides -- 1.5 Soil and Its Sustainability -- 1.5.1 Soil and Plant Environment as a Sustaining Environment for Microbial Life -- 1.5.2 Mechanisms and Application of Plant Growth-Promoting Microbes in Agricultural Soils -- 1.5.3 Microbial Disease-Suppressive Agents -- 1.5.3.1 Siderophore -- 1.5.3.2 Phytoalexin -- 1.5.4 Impact of Microbes in Enhancing Soil Fertility, Health and Plant Growth Attributes -- 1.6 Conclusions -- References -- Chapter 2: Biofertilizers: The Role in Sustainable Agriculture -- 2.1 Introduction -- 2.1.1 Rhizobium -- 2.1.2 Azospirillum -- 2.1.3 Azotobacter -- 2.1.4 Phosphorus-Solubilizing and Phosphorus-Mobilizing Microbes -- 2.2 Biofertilizers: Why their Need Is Inevitable? -- 2.3 How Biofertilizers Work -- 2.3.1 Direct Way -- 2.3.2 Indirect Way -- 2.4 Methods of Application of Biofertilizers to Crops -- 2.4.1 Seed Treatment -- 2.4.2 Seedling Root Dip -- 2.4.3 Soil Treatment -- 2.5 The Role of Biofertilizers in the Alleviation of Environmental Stresses -- 2.6 Some Factors Limiting the Use of Biofertilizers -- 2.7 Conclusions -- References. Chapter 3: Organic Farming for Sustainable Soil Use, Management, Food Production and Climate Change Mitigation -- 3.1 Introduction -- 3.2 Need for Organic Farming -- 3.3 Key Aspects of Organic Farming -- 3.4 Organic Fertilisers -- 3.5 Principles of Organic Farming -- 3.5.1 Principle of Health -- 3.5.2 Principle of Fairness -- 3.5.3 Principle of Ecological Balance -- 3.5.4 Principle of Care -- 3.6 Unsustainability of Conventional Farming -- 3.7 Essentials of Organic Farming -- 3.7.1 Farmyard and Other Organic Manures -- 3.7.2 Vermicompost -- 3.7.3 Green Manuring -- 3.7.4 Organic Matter Application and Restoration -- 3.7.5 Crop Rotation -- 3.7.5.1 Principles for Crop Rotation -- 3.7.5.2 Steps for Crop Rotation and Planning -- 3.7.6 Mulching -- 3.7.7 Integrated Nutrient Management -- 3.7.8 Zero Tillage -- 3.8 Benefits of Organic Farming -- 3.8.1 Crop Productivity -- 3.8.2 Soil Fertility and Biological Parameters -- 3.8.3 Sustainable Soil Management -- 3.8.4 Water Management -- 3.8.5 Pest and Disease Management -- 3.8.6 Cover Crops and Crop Rotation -- 3.9 The Organic Food System -- 3.9.1 Classification -- 3.9.2 Production -- 3.9.3 Distribution -- 3.10 Effect of Organic Farming on Climate Change -- 3.10.1 Reduction of Greenhouse Gas Emission -- 3.10.2 Reducing Energy Use -- 3.10.3 Helping Farmers to Adapt to Climate Change -- 3.10.4 Storing Carbon in the Soil -- 3.10.5 Advocating for Policy Change -- 3.11 Conclusions -- References -- Chapter 4: The Role of Plant Extracts in Sustainable Agriculture -- 4.1 Introduction -- 4.2 Commonly Used Botanicals -- 4.3 Significance of Botanicals -- 4.4 Plant Extracts Used as Biopesticides (Based on Different Categories) -- 4.5 Positives of Biopesticides -- 4.6 Plant Extracts Used as Bioherbicides (Categorized Based on Different Modes of Action). 4.7 Plant Extracts Used as Fungicides and Antimicrobial (Based on Modes of Action) -- 4.8 Secondary Metabolites and their Mechanism of Action -- 4.9 Plant Extracts with Anti-Parasitic Properties -- 4.10 Conclusions -- References -- Chapter 5: Botanical Pesticides for an Eco-Friendly and Sustainable Agriculture: New Challenges and Prospects -- 5.1 Introduction -- 5.2 Sustainable Agriculture: A Promise to the Future -- 5.3 The Growing Pest Emergence, Problem

and Utilization of Chemical Pesticides -- 5.4 Erroneous Effects of Chemical Pesticides in Agriculture: Hazards to Human Health, Insect Biodiversity and Aquatic Ecosystem -- 5.5 Botanical Pesticides: A Natural Alternative for Chemical Pesticides -- 5.5.1 Source of Botanical Pesticides -- 5.5.2 Benefits of Botanical Pesticides over Synthetic Pesticides -- 5.5.3 Biodegradability of Botanical Pesticides -- 5.5.4 Botanical Pesticides for Integrated Pest Management -- 5.6 Prospects of Botanical Pesticides: Discussion and Conclusion -- References -- Chapter 6: The Role of Plant-Mediated Biosynthesised Nanoparticles in Agriculture -- 6.1 Introduction -- 6.2 Types of Different Nanoparticles (NPs) -- 6.2.1 Inorganic-Based Nanomaterials -- 6.2.2 Organic-Based Nanomaterials -- 6.2.3 Carbon-Based Nanomaterials -- 6.2.4 Composite-Based Nanomaterials -- 6.3 Techniques for the Readiness of Nanoparticles -- 6.3.1 Top-Down Approach -- 6.3.2 Bottom-Up Approach -- 6.4 Methods of Nanoparticle Production -- 6.4.1 Physical Methods -- 6.4.1.1 Mechanical Attrition -- 6.4.1.2 Condensation of Inert Gas -- 6.4.1.3 Physical Vapour Deposition -- 6.4.2 Chemical Methods -- 6.4.3 Gas-Phase Synthesis -- 6.4.4 Liquid-Phase Synthesis -- 6.5 Limitations of Chemical and Physical Methods -- 6.6 Characterisation of Nanomaterials -- 6.6.1 UV-vis Spectroscopy -- 6.6.2 Scanning Electron Microscopy (SEM) -- 6.6.3 X-Ray Diffraction (XRD). 6.6.4 Transmission Electron Microscopy (TEM) -- 6.6.5 Fourier Transmission Infrared Spectroscopy (FTIR) -- 6.6.6 Atomic Force Microscopy -- 6.7 Biological Synthesis of Nanomaterials -- 6.7.1 Bacteria-Mediated Biosynthesis of Nanomaterials -- 6.7.2 Fungal-Mediated Nanomaterials -- 6.7.3 Plant-Based Nanomaterials -- 6.8 The Role of Nanoparticles in Agriculture -- 6.8.1 Crop Productivity -- 6.8.2 Plant Protection -- 6.9 Conclusions -- References -- Chapter 7: The Role of Green Synthesised Zinc Oxide Nanoparticles in Agriculture -- 7.1 Introduction -- 7.2 Zinc Oxide Nanoparticles (ZnO-NPs) -- 7.3 Nanoparticles Synthesis -- 7.4 Methods of Nonmaterial Synthesis -- 7.4.1 Physical Synthesis -- 7.4.2 Chemical Synthesis -- 7.4.3 Biological Synthesis -- 7.5 Limitations of Conventional Methods for ZnO Nanoparticle Synthesis -- 7.6 Characterisation of ZnO Nanoparticles -- 7.6.1 UV-Visible Spectroscopy -- 7.6.2 Transmission Electron Microscopy -- 7.6.3 Scanning Electron Microscopy -- 7.6.4 Dynamic Light Scattering -- 7.6.5 Energy-Dispersive X-Ray Spectroscopy -- 7.6.6 X-Ray Diffraction -- 7.6.7 Fourier Transforms Infrared Spectroscopy -- 7.6.8 Atomic Force Microscopy (AFM) -- 7.7 The Role of Green Synthesised Zinc Oxide Nanoparticles (ZnO-NPs) in Agriculture -- 7.8 The Role of ZnO-NPs under Abiotic Stress -- References -- Chapter 8: Biochar: A Game Changer for Sustainable Agriculture -- 8.1 Introduction -- 8.2 Formulation, Properties and Biochemistry of Biochar -- 8.2.1 Feedstock for the Production of Biochar -- 8.2.2 Pyrolysis Methods for Biochar Production -- 8.2.3 Biochar Properties -- 8.3 The Role of Biochar in Sustainable Agriculture -- 8.3.1 Biochar and Nutrients Dynamics -- 8.3.1.1 Direct and Indirect Nutrient Values of Biochar -- 8.3.1.2 Biochar as a Soil Amendment -- 8.3.2 Biochar's Impact on Soil Microbiota and Plant Growth. 8.3.3 The Effect of Biochar on Soil Enzymes -- 8.3.4 The Effects of Biochar on Microorganism Extracted Soil Enzymes -- 8.4 Conclusions and Future Outlook -- References -- Chapter 9: Production of Biochar Using Top-Lit Updraft and Its Application in Horticulture -- 9.1 Introduction -- 9.2 Methods of Biochar Production -- 9.2.1 Properties and Characteristics of Biochar -- 9.2.1.1 Physical Characters -- 9.2.1.2 Chemical Characters -- 9.3 Biochar as a Soil Amendment -- 9.3.1 Biochar Impact on Soil Physicochemical

Properties -- 9.3.2 Impact of Biochar on Soil Microorganisms -- 9.3.3
Application of Biochar in Horticulture -- 9.4 Sustainable Agriculture
and Biochar -- 9.5 Conclusions -- References -- Chapter 10: The Use
of Genomics and Precise Breeding to Genetically Improve the Traits
of Agriculturally Important Organisms -- 10.1 Introduction -- 10.2
Genomic and Precise Breeding Techniques -- 10.2.1 454
Pyrosequencing -- 10.2.2 Ion Torrent -- 10.2.3 Illumina Sequencing --
10.3 Applications of Genomics -- 10.4 Precision Breeding Techniques
-- 10.4.1 Zinc Finger Nucleases -- 10.4.2 TALENs -- 10.4.2.1
Application of TALENs in Crop Plants -- 10.4.3 CRISPR/Cas -- 10.5
Regulation of Genome-Edited Crops -- 10.6 Technological Risks --
10.7 Conclusions and Future Perspectives -- References -- Chapter 11:
Plant Growth-Promoting Rhizobacteria (PGPR): Strategies to Improve
Heavy Metal Stress Under Sustainable Agriculture -- 11.1 Introduction
-- 11.2 An Introduction to PGPR -- 11.3 Mechanisms of PGPR's Action
-- 11.3.1 Direct Mechanism -- 11.3.1.1 Nitrogen Fixation -- 11.3.1.2
Phosphate Solubilisation -- 11.3.1.3 Siderophore Production --
11.3.1.4 Production of Phytohormone -- Indole Acetic Acid (IAA) --
Gibberellins and Cytokinins -- 11.3.2 Indirect Mechanisms -- 11.3.2.1
Antibiotic Production -- 11.3.2.2 Lytic Enzyme Production.
11.3.2.3 Development of Induced Systemic Resistance (ISR).
