Record Nr. UNINA9910760264903321 Climate-Resilient Agriculture . Volume 2 Agro-Biotechnological **Titolo** Advancement for Crop Production / / Mirza Hasanuzzaman, editor Pubbl/distr/stampa Cham, Switzerland:,: Springer, Springer Nature Switzerland AG,, [2023] ©2023 **ISBN** 3-031-37428-2 Edizione [First edition.] 1 online resource (1003 pages) Descrizione fisica 338.16 Disciplina Agricultural biotechnology Soggetti Climatic changes Crops and climate Lingua di pubblicazione Inglese Formato Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references and index. 1. Climate Change and Global Crop Production: An Inclusive Insight --Nota di contenuto 2. Uptake and Use Efficiency of Major Plant Nutrients for Climate Resilient Agriculture -- 3. Improving Land Use Efficiency for Climate Resilient Agriculture -- 4. Climate Resilient Fertilizer Management for Crop Production -- 5. Modern Agronomic Measurement for Climate Resilient Agriculture -- 6. Crop Management for Sustainable Wheat Production -- 7. Climate Resilient Weed Management for Crop Production -- 8. Climate Resilient Technology for Maize Production --9. Climate Resilience Technologies for Wheat production -- 10. Improving Plant Nutrient Use Efficiency for Climate Resilient Agriculture -- 11. Biochar for Plant Stress Tolerance for Climate Resilient Agriculture -- 12. Chitosan for Plant Growth and Stress Tolerance --13. Exogenous Application of Biostimulants and Commercial Utilization -- 14. Crosstalk of Biostimulants with Other Signaling Molecules under Abiotic Stress -- 15. Abiotic Stress Sensitivity and Adaptation in Field Crops,- 16. Biostimulants for Plant Abiotic Stress Resistance and Climate-Resilient Agriculture -- 17. Approaches in Enhancing Salt Tolerance in Plants -- 18. Mechanism and Approaches to Enhance Salt Stress Tolerance in Crop Plants -- 19. Mechanisms and Approaches of

Enhancing Drought Stress Tolerance in Crops Plants -- 20. Conferring

Plant Tolerance to Drought and Salinity by the Application of Biochar --21. Accumulation and Toxicity of Arsenic in Rice and its Practical Mitigation -- 22. Mechanism and Approaches to Enhancing Heat Stress Tolerance in Crop Plants -- 23. Mechanisms and Responses to Enhancing Pollutants Stress Tolerance in Crop Plants -- 24. Phytohormones as Stress Mitigator in Plants -- 25. Role of Plant Extracts and Biostimulant in Mitigating of Plant Drought and Salinity Stress -- 26. Secondary Metabolism and its Role in Enhancing Drought Stress Tolerance -- 27. Seed Priming for Abiotic Stress Tolerance --28. Advances in Biotechnological Tools and their Impact on Global Climate Change and Food Security -- 29. Biotechnological Attributes of Bio-stimulants for Relieving Abiotic Stress -- 30. Biotechnological Techniques for Sustainable Waste Management -- 31. Role of Biotechnology in Management of Solid Waste -- 32. Bioremediation of Sites Contaminated with Heavy Metals, Techniques and their Application -- 33. MicroRNAs (miRNAs): Crosstalk with Regulatory Networks of Abiotic Stress Tolerance in Plants -- 34. Orchestration of Omics Technologies for Crop Improvement -- 35. Transgenic Approaches for Stress Tolerance in Crops -- 36. Translationally Controlled Tumor Protein and its Relationship with Responses of Plants to Abiotic Stresses -- 37. Plant Tissue Culture and Crop Improvement -- 38. Nanotechnology for Climate-Resilient Agriculture -- 39. Mitigation of Plant Abiotic Stress by Plant Growth Promoting Bacteria, Hormones and Plant Extracts -- 40. Bioremdiation and Phytoremediation Aspects of Crop Improvement -- 41. Ecofriendly Management of Insect Pests for Sustainable Agriculture -- 42. Ecofriendly Management of Disease for Sustainable Agriculture -- 43. Use of Advance Composting Techniques and Areas of Improvement in Pakistan.

## Sommario/riassunto

Under ongoing climate change, natural and cultivated habitats of major food crops are being continuously disturbed. Such condition accelerates to impose stress effects like abiotic and biotic stressors. Drought, salinity, flood, cold, heat, heavy metals, metalloids, oxidants, irradiation etc. are important abiotic stresses; and diseases and infections caused by plant pathogens viz. fungal agents, bacteria and viruses are major biotic stresses. As a result, these harsh environments affect crop productivity and its biology in multiple complex paradigms. As stresses become the limiting factors for agricultural productivity and exert detrimental role on growth and yield of the crops, scientists and researchers are challenged to maintain global food security for a rising world population. This two-volume work highlights the fast-moving agricultural research on crop improvement through the stress mitigation strategies, with specific focuses on crop biology and their response to climatic instabilities. Together with "Climate Resilient Agriculture, Vol 1: Crop Responses and Agroecological Perspectives", it covers a wide range of topics under environmental challenges, agronomy and agriculture processes, and biotechnological approaches, uniquely suitable for scientists, researchers and students working in the fields of agriculture, plant science, environmental biology and biotechnology.