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Nota di contenuto	1. Farmer’s Perspective on Climate Change and Agricultural Production -- 2. Greenhouse gas emission: problems, global reality and future perspectives -- 3. Improving soil properties through various soil amendments under changing climate scenario -- 4. Paradigm shift from traditional to innovative extension approaches in changing agricultural scenario for better crop productivity -- 5. Impact of Agri-based technological interventions for managing poor soils and policy insights -- 6. Advanced strategies for crop improvement against abiotic stresses: An integrated view from breeding to genomics -- 7. Breeding strategies for improved multi-stress resilient crops -- 8. Speed Breeding: A budding technique to improve crop plants for multi-stress tolerance -- 9. Epigenetics regulation of abiotic stress in crop plants -- 10. Gene editing prospective for engineering climate smart plants -- 11. Next-gen strategies in host plant resistance to insects: breakthroughs and future horizons -- 12. Underlying survival mechanisms in model trees for enhanced abiotic stress tolerance -- 13.

Homeostasis of plant metabolites in mitigating abiotic stress challenges -- 14. Integrating Multi-Omics Strategies to Enhance Crop Resilience in a Changing Climate -- 15. Advancing Sustainable Agriculture Through Plant-Microbial Interactions Amid Climate Change -- 16. CRISPR/Cas-based fungal genome engineering for secondary metabolite production: progress and challenges -- 17. Microbial Contributions to Crop Adaptation: Innovation for Climate-Resilient Agriculture -- 18. Effect of Climate Change on Seed Quality Development -- 19. Recent advances towards abiotic stresses tolerance and improvement in barnyard millet: a climate-resilient crop for food security -- 20. Challenges and opportunities of cultivating sandalwood (Santalum album) under abiotic stress conditions -- 21. Potential of halophytes in greening the barren land and making use of waste lands.

Sommario/riassunto

This edited volume compiles recent advancements in techniques and technologies for sustainable crop production, focusing on innovative approaches to mitigate the adverse effects of environmental stress on crop productivity. The book offers a comprehensive overview of advanced physiological, molecular, agronomic, microbial, and breeding strategies designed to improve crop performance under stress conditions. It emphasizes high-throughput phenotyping and genotyping technologies, facilitating precise breeding for the development of climate-resilient crop varieties. The increasing impacts of climate change and global warming are now widely recognized as major threats to global food security, exacerbated by the depletion of natural resources essential for agricultural activities. With the world population projected to reach 10 billion by 2050, the scientific community is tasked with finding critical solutions to meet the growing demand for food. Addressing these challenges requires interdisciplinary approaches that integrate plant and soil systems, focusing on the development of sustainable, climate-smart agricultural practices. This volume explores technological interventions for managing degraded soils and water resources, optimizing nutrient management, leveraging microbial diversity, and employing nanobiotechnology for crop improvement. It also addresses the economics of agricultural investment, providing insights into the cost-effectiveness and sustainability of adopting climate-smart practices. The book offers a detailed analysis of the physiological, biochemical, and molecular mechanisms underlying plant responses to environmental stress, helping readers understand how plants adapt to adverse conditions. It also presents practical strategies for developing multi-stress-tolerant, climate-resilient crops, making it an invaluable resource for researchers, students, and professionals in agriculture, plant physiology, biochemistry, forestry, agronomy, soil science, and environmental sciences.