1. Record Nr. UNINA9911021970303321

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Titolo	Biochar: A Precious Resource from Biological Waste : Applications for Soil, Plant and Environmental Health / / edited by Shraddha Singh, Sudhakar Srivastava
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2025
ISBN	981-9504-25-2
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (437 pages)
Collana	Earth and Environmental Science Series
Altri autori (Persone)	SrivastavaSudhakar
Disciplina	631.4
Soggetti	Soil science Ecology Agriculture Microbial ecology Soil Science Environmental Sciences Microbial Ecology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I. Biochar Generation: A wealth from waste -- Chapter 1. Management of biological waste: physical, chemical and biological methods -- Chapter 2. Biochar: A sustainable solution for agriculture and environment -- Chapter 3. The role of biochar in sustainable agriculture -- Chapter 4. An overview of methods and techniques for the preparation and characterization of biochar -- Chapter 5. Household kitchen waste: A resource that needs to be tapped -- Chapter 6. Agricultural waste biomass management and biochar production -- Chapter 7. Biochar from animal waste and its applications -- Part II. Biochar Application for the management of soil health and crop productivity -- Chapter 8. Drought stress mitigation with the use of biochar -- Chapter 9. Application of biochar for salinity stress management -- Chapter 10. Biochar as a treasure trove of essential nutrients: Combating elemental deficiency in crops -- Chapter 11. Biochar-mediated restoration: Transforming invasive plants and crop residues into ecological assets -- Chapter 12. Regaining the soil

eminence through the interaction of biochar and soil microbiome.

Sommario/riassunto

This book addresses the global challenge of feeding a growing population while grappling with diminishing land resources, deteriorating soil quality, and the impact of climate change. Its core focus is the role of soil health in sustaining and enhancing crop production. Key factors for successful agriculture include organic carbon levels, microbial activity, nutrient availability, optimal pH, and redox conditions. Additionally, the book explores the issue of agricultural waste, including rice and wheat straw, surplus vegetables, and various forms of biological waste like kitchen scraps and animal waste, all of which contain valuable nutrients. The book highlights the significance of harnessing the potential within biological waste, rich in essential elements such as phosphorus, potassium, iron, zinc, and copper. It emphasizes the sustainable use of biochar, a material produced through the pyrolysis of diverse biological waste sources. Biochar application, explored in various dosages for different crops and fields, can effectively enhance soil pH, redox potential, organic carbon content, and essential nutrient availability while mitigating the bioavailability of toxic metals. It includes the generation and characterization of biochar, shedding light on its vital role in abiotic stress amelioration and growth and yield improvement of crops. This book is a resource material for students, academicians, and scientists seeking up-to-date insights on biochar. By addressing the critical intersection of sustainable agriculture, waste management, and soil health, this book equips readers with a valuable resource to navigate the challenges of modern farming practices.