Record Nr.	UNINA9910554816303321
Titolo	Applied soil chemistry / / edited by Inamuddin [and three others]
Pubbl/distr/stampa	Hoboken, New Jersey;; Beverly, Massachusetts:,: Scrivener Publishing:,: Wiley,, [2021] ©2021
ISBN	1-5231-4319-3
	1-119-71150-9
	1-119-71149-5
Descrizione fisica	1 online resource (288 pages)
Disciplina	631.41
Soggetti	Soil chemistry
	Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover Half-Title Page Series Page Title Page Copyright Page Contents Preface 1 Potential and Challenges of Carbon Sequestration in Soils List of Abbreviations and Units 1.1 Introduction 1.1.1 Soil Decomposition Processes 1.1.2 Organic Compounds Present in Soils 1.1.3 Cycle Time of Carbon in Soils 1.2 Influences Impacting Carbon Stabilization Rates in Soils 1.2.1 Weather Conditions and Fluctuations 1.2.2 Plant and Natural Biomass Inputs 1.2.3 Organic Enrichment Treatments 1.2.4 Tilled and Ploughed Agricultural Land 1.2.5 Pasture Managed for Livestock Grazing 1.2.6 Irrigated Arable Lands and Their Associated Drainage 1.2.7 Uncertain Impacts of Soil Erosion and Redistribution on Its Carbon Store 1.2.8 Fire Impacts on Soil Characteristics 1.3 Carbon-Sequestration Potential of Specific Vegetation Zones and Ecosystems 1.3.1 Croplands 1.3.2 Grasslands 1.3.3 Woodlands 1.3.4 Temperate Wetlands and Peat Bogs 1.3.5 Induced Changes in Vegetation and Land Conditions 1.3.6 Warm Temperate and Tropical Vegetated Zones 1.4 Estimates of Global Potential for Carbon Sequestration in Soils 1.5 Conclusions References 2 A Brief Insight on Factors Controlling Rate of Chemical

1.

Weathering of Minerals Existing in Soil -- 2.1 Introduction -- 2.1.1 Weathering Similar to Hydrothermal and Diuretic Alteration of Minerals -- 2.2 Comparitive Stability of Minerals on the Basis of Their Sequence of Weathering -- 2.2.1 Heavy Minerals -- 2.2.2 Coarsely Grinded Minerals -- 2.2.3 Clay Size Mineral Particles -- 2.3 Factors Affecting the Rate of Chemical Weathering -- 2.3.1 Capacity Factors Which Controls the Reaction Rate of Chemical Weathering -- 2.3.2 Intensity Factors Which Drives the Chemical Weathering Reaction Rate -- 2.4 Conclusion -- References -- 3 Agroecosystems and Bioeconomy. 3.1 Introduction -- 3.2 Problems Related to Agricultural Intensification -- 3.3 Important Themes and Indicators -- 3.4 The Bioeconomy -- 3.5 On Circular Bioeconomy -- 3.6 Bioeconomy, Environment, and Natural Capital -- 3.7 The Bioeconomy in Daily Life -- 3.8 Conclusions --References -- 4 Technological Advances in Analyzing of Soil Chemistry -- 4.1 Introduction -- 4.2 Soil Chemistry -- 4.2.1 Advances in Time-Resolved Molecular Scale Techniques -- 4.2.2 Carbon Speciation in Soils -- 4.2.3 Soil Analysis Using Sensors -- 4.2.4 Soil Analysis Using AI -- 4.2.5 Soil Analysis Using ML -- 4.2.6 Soil Analysis Using IoT --4.2.7 Soil Analysis Using Big Data -- 4.2.8 Soil Analysis Using Drone and/or Satellite -- 4.3 Conclusion -- References -- 5 An Overview of Soil Chemistry and Role of Its Components in Sorption of Heavy Metals in Soil -- 5.1 Introduction -- 5.2 Composition of Soil -- 5.2.1 Solid Phase -- 5.2.2 Liquid Phase -- 5.2.3 Gaseous Phase -- 5.3 Soil Characterization -- 5.3.1 Structure -- 5.3.2 Color -- 5.3.3 Texture --5.3.4 Bulk Density -- 5.3.5 Particle Size Distribution -- 5.4 Physico-Chemical Properties of Soil -- 5.4.1 Soil pH -- 5.4.2 Soil Temperature -- 5.4.3 Electrical Conductivity -- 5.4.4 Cation Exchange Capacity --5.5 Sorption Behavior of Soil -- 5.6 Conclusion -- References -- 6 Soil and Their Contaminants -- 6.1 Introduction -- 6.1.1 Component of Soil -- 6.1.2 Major Types of Soil in India -- 6.1.3 The Various Factors Occurs in Soil Formation -- 6.1.4 Types of Soil Textures -- 6.2 Soil Organic Matter (SOM) -- 6.2.1 Soil Chemical Reaction -- 6.2.2 Sality and Acidity -- 6.3 Contaminants in Soil -- 6.3.1 Pesticides -- 6.3.2 Some of the Adverse Effects of Pesticides -- 6.4 Pollution of Soil --6.4.1 Effects of Modern Agriculture -- 6.4.2 Effects of Chemicals -- 6.5 Chemistry of Saline Soil -- 6.6 The Effect of Salinity in Plant Growth. 6.7 Conclusion -- References -- 7 Fertilization and Fertilizer Types --7.1 Introduction -- 7.2 The Purpose and Application Methods of Fertilization -- 7.3 Classification of Fertilizers -- 7.4 Fertilizers Containing Organic Matters -- 7.4.1 Herbal and Animal-Based Fertilizers -- 7.4.2 Organomineral Fertilizers -- 7.4.3 Soil Conditioners -- 7.5 Chemical Fertilizers -- 7.5.1 Solid and Liquid Fertilizers With Inorganic Primary Single and Compound Plant Nutrients -- 7.5.2 Fertilizers With Inorganic Secondary Nutrients -- 7.5.3 Fertilizers With Micro Plant Nutrients -- 7.6 Conclusion and Evaluation -- References -- 8 Heavy Metal Chemistry in Soils -- 8.1 Introduction -- 8.2 Outline of the Heavy Metal Chemistry in Soil -- 8.3 Conclusions -- 8.4 Abbreviations -- Acknowledgment -- References -- 9 Modeling of Pollutant Mobility in Soil -- 9.1 Introduction -- 9.2 Modeling of Heavy Metal Sorption onto Soil or Soil Components -- 9.3 Modeling of Sorption of Other Pollutants onto Soil or Soil Components -- 9.4 Conclusion -- References -- 10 Soil Chemistry: Composition and Laws -- 10.1 Introduction -- 10.2 The Materials With Which Nutrients React -- 10.2.1 The Clay Minerals -- 10.2.2 Variable-Charge Mineral Surfaces -- 10.2.3 Organic Matter -- 10.3 Soil Chemistry: Laws --10.3.1 First Law -- 10.3.2 Second Law -- 10.3.3 Third Rule --Acknowledgments -- References -- 11 Parameters of Soil Chemistry --11.1 Introduction -- 11.1.2 Soil Morphology -- 11.1.3 Basic Soil

Components -- 11.2 Concepts of Soil Chemistry -- 11.2.1 Soil Aeration -- 11.2.2 Soil Colloid -- 11.2.3 Soil Water -- 11.2.4 Ion Exchange Property -- 11.2.5 Soil pH-Acidity and Alkalinity -- Acknowledgments -- References -- 12 Essential Soil Functions for Enhanced Agricultural Productivity and Food Production -- 12.1 Introduction -- 12.2 Effect of Pesticides on Soil Function Indicator. 12.3 Soil Organic Matter -- 12.4 Soil Organic Carbon -- 12.4.1 Relationship Between Global Carbon Cycle and Soil Carbon as a Typical Example of Soil Function -- 12.4.2 Relationship Between CO -- Levels in the Atmosphere and Soil Carbon Content -- 12.4.3 Relationship Between Soil Organic Content and Soil Carbon Sequestration -- 12.4.4 Essential Soil Biological Processes and Their Relationship With Soil pH -- 12.4.5 Soil Enzyme Activities and Their Relationship With Soil pH --12.4.6 Biodegradation of Toxic Substances by Soil Microorganisms and Their Relationship With Soil pH -- 12.5 Conclusion and Future Recommendation to Knowledge -- References -- 13 Role of Pesticide Applications in Sustainable Agriculture -- 13.1 Introduction -- 13.2 Various Types of Pesticides and Their Application in Agriculture -- 13.3 Modes of Action of Pesticides -- 13.3.1 Organochlorine Pesticides --13.3.2 Organophosphorus Pesticides -- 13.3.3 Carbamate Pesticides -- 13.3.4 Other Classes of Chemical Pesticides -- 13.4 Conclusion and Recommendation to Knowledge -- References -- Index -- EULA.