Contents

1	Soil Enzyme: The State-of-Art Madhunita Bakshi and Ajit Varma	. 1
2	Role of Enzymes in Maintaining Soil Health	25
3	Agricultural and Ecological Significance of Soil Enzymes: Soil Carbon Sequestration and Nutrient Cycling	43
4	Enzymes in Forest Soils	61
5	Extracellular Enzymes in Sensing Environmental Nutrients and Ecosystem Changes: Ligand Mediation in Organic Phosphorus Cycling	75
6	Importance of Extracellular Enzymes for Biogeochemical Processes in Temporary River Sediments during Fluctuating Dry-Wet Conditions	103
7	Soil Enzymes as Indication of Soil Quality Ayten Karaca, Sema Camci Cetin, Oguz Can Turgay, and Ridvan Kizilkaya	119
8	Enzyme Activities in the Rhizosphere of Plants Dilfuza Egamberdieva, Giancarlo Renella, Stephan Wirth, and Rafiq Islam	149

x Contents

9	Lignocellulose-Degrading Enzymes in Soils	167
10	Heterophase Synthesis of Humic Acids in Soils by Immobilized Phenol Oxidases A.G. Zavarzina	187
11	Fungal Oxidoreductases and Humification in Forest Soils	207
12	Evolutionary-Economic Principles as Regulators of Soil Enzyme Production and Ecosystem Function Steven D. Allison, Michael N. Weintraub, Tracy B. Gartner, and Mark P. Waldrop	229
13	Controls on the Temperature Sensitivity of Soil Enzymes: A Key Driver of In Situ Enzyme Activity Rates Matthew Wallenstein, Steven Allison, Jessica Ernakovich, J. Megan Steinweg, and Robert Sinsabaugh	245
14	Actinomycetes: Sources for Soil Enzymes V. Suneetha and Zaved Ahmed Khan	259
15	Organo-Mineral-Enzyme Interaction and Soil Enzyme Activity	271
16	The Influence of Pesticides on Soil Enzymes Liliana Gianfreda and Maria A. Rao	293
17	Behavior of Enzymatic Activity in Chilean Volcanic Soil and Their Interactions with Clay Fraction	313
18	Screening, Characterisation and Optimization of Microbial Pectinase V. Suneetha and Zaved Ahmed Khan	329
19	Molecular Techniques to Study Polymorphism between Closely Related Microorganisms in Relation to Specific Protein Phosphatase	339
	Rajani Malla, Utprekshya Pokharel, Ram Prasad, and Ajit Varma	

Contents	X
----------	---

20	Production of Ligninolytic Enzymes by White-rot Fungi during	
	Bioremediation of Oil-contaminated Soil	363
	Natalia N. Pozdnyakova, Ekaterina V. Dubrovskaya, Oleg E. Makarov, Valentina E. Nikitina, and Olga V. Turkovskaya	
Ind	ex	379