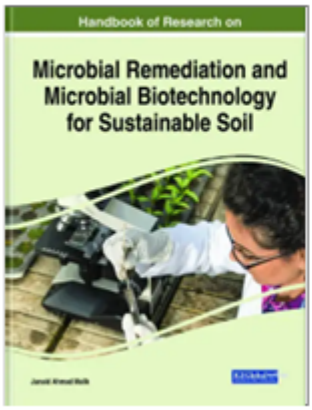

Handbook of Research on Microbial Remediation and Microbial Biotechnology for Sustainable Soil

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Release Date: June, 2021 | Copyright: © 2021 | Pages: 806
DOI: 10.4018/978-1-7998-7062-3
ISBN13: 9781799870623 | ISBN10: 1799870626 |
EISBN13: 9781799870647

Chapter 1

Effect of Pollution on Physical and Chemical Properties of Soil (/chapter/effect-of-pollution-on-physical-and-chemical-properties-of-soil/276655) (pages 1-37)

Trinath Biswal, Junaid Ahmad Malik

The soil is considered to be one of the most important substances for the existence of the biotic community. The quality of the soil is continually degrading...

Chapter 2

Bioremediation and Phytoremediation: The Remedies for Xenobiotics

(/chapter/bioremediation-and-phytoremediation/276656) (pages 38-64)

Leena Merlin Biju, Veena Gayathri Krishnaswamy

Industrialization led to the release of synthetic and toxic compounds. Partial or improper treatment increases environmental pollution. Conventional methods...

Chapter 3

Microbes and Their Role in Bioremediation of Soil: A Detailed Review (/chapter/microbes-and-their-role-in-bioremediation-of-soil/276657) (pages 65-113)

A. Madhavi, M. Srinivasulu, V. Rangaswamy

Soil is the Earth's shell and is getting polluted in a number of ways in the present scenario. Human activities are the root cause of different types of...

Chapter 4

Microbes as Sustainable Biofertilizers: Current Scenario and Challenges (/chapter/microbes-as-sustainable-biofertilizers/276658) (pages 114-133)

Halima M., Sneha Unnikrishnan, Karthikeyan Ramalingam

Across the globe, in both developed and developing countries, wheat provides the fundamental support for all other important foods. However, due to climate...

Chapter 5

Favorable Soil Microbes for Sustainable Agriculture (/chapter/favorable-soil-microbes-for-sustainable-agriculture/276660) (pages 135-157)

Umair Riaz, Laila Shahzad, Wajiha Anum, Anam Waheed

Beneficial microbes are used as the best alternative against the synthetic fertilizers and pesticides. The beneficial microbes not only help with plant...

Chapter 6

Soil Microbiome for Plant Growth and Bioremediation (/chapter/soil-microbiome-for-plant-growth-and-bioremediation/276661) (pages 158-180)

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Microbial Remediation and Microbial Biotechnology for Sustaina

Monika Yadav, Sonu Kumari, Junaid Ahmad Malik, Suphiya Khan

Terrestrial soil is a complex part of the ecosystem hosting bacteria, fungi, protists, animals, and huge source of nutrients to plants. These soil-dwelling...

Chapter 7

Microbial Products and Their Role in Soil Health and Sustainable Agriculture (/chapter/microbial-products-and-their-role-in-soil-health-and-sustainable-agriculture/276662) (pages 181-204)

Amrendra Kumar, Swati Agarwal

Microbial products are being used from ages in known as well as unknown forms. Some common products harvested from microbes include proteins, amino acids...

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n on Microbial Remediation and Microbial Biotechnology for Sustaina

Chapter 16

Microbial Bioremediation of Heavy Metals: A Genetic and Omics Approach

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ABSTRACT

Heavy metals are found naturally. Anthropogenic activities and rapid industrialization have led to their unprecedented release into the environment. Being non-biodegradable in nature, they persist in the environment. Prolonged exposure and accumulation of these metals poses a serious threat to the ecosystem. Conventional treatment of contaminated material whether soil or water involves expensive chemical or physical methods which are arduous, energy demanding, and carry the risk of secondary contamination. It is thus necessary to adopt a sustainable remediation process to mitigate this problem. Biological remediation processes are preferable as they are environmentally safe, techno-economically feasible, and do not generate toxic byproducts. Microbial bioremediation is particularly attractive as it allows remediation processes by tapping naturally occurring catabolic capacities to transform, accumulate, and adsorb metals for detoxification. It is a comparatively low-cost technology. Therefore, microbial bioremediation is promising as an alternative to physico-chemical methods.

DOI: 10.4018/978-1-7998-7062-3.ch016