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Vol. 2



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Research in Mycology



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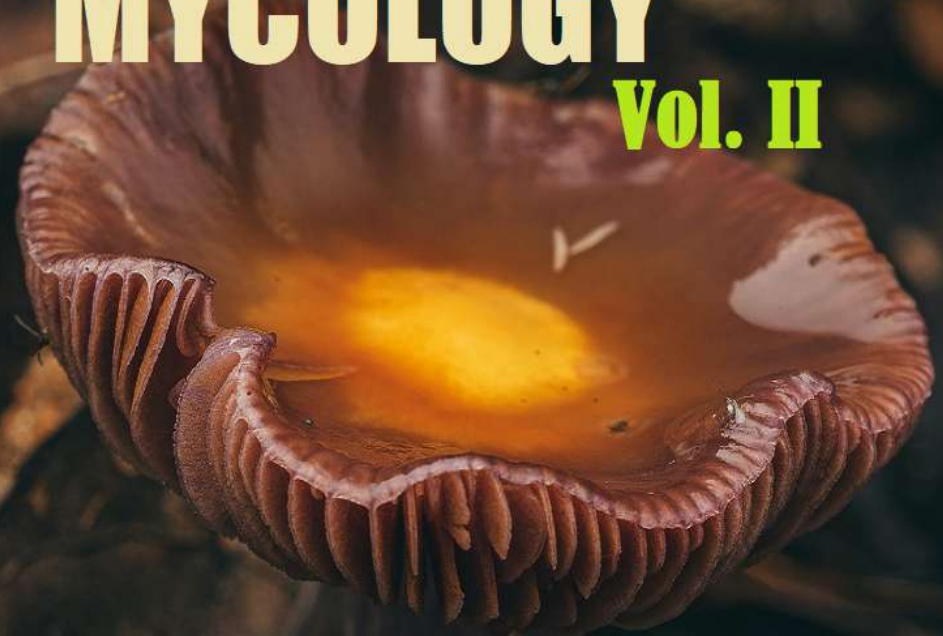
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PREFACE

Mycology is the specialist branch of fungal study. Fungi are the most diverse group of heterotrophic organisms and second largest biotic community after insects on earth. They are grouped into separate Kingdom Fungi. Fungi have thalloid body without cells being organized into tissues and organs. Fungi are the parasitic, saprophytic or symbiotic in nature. They also play key role in terrestrial ecosystems. Fungi are the primary decomposers of lignocellulosic material and the main keepers of great carbon storage in soil as well as dead organic materials. Their edibility, medicinal properties, mycorrhizal and parasitic association with the forest trees make them economically and ecologically important for investigation. The term macro fungi are generally applied to the fruiting bodies of fungi belonging to Ascomycetes and Basidiomycetes. Ascomycetes and Basidiomycetes are either Epigeous or Hypogeous, large enough to be seen by naked eyes hence they can be picked by hand. Micro fungi may cause pathological disease to the plants, animals, and human. Furthermore, most of fungi are microscopic in nature, invisible and they cause their action.

Mycology is one conventional branch The book is about fungus, which are expertly defined as the creatures researched by mycologists. Fungal research having vast of topics covered in research like as the Role of Antifungal Metabolites from Bryophytes, Fungal Species Isolated from *Amaranthus viridis* and *Hibiscus cannabinus*, Mycoremediation: Annihilation of Environmental Pollutants. Fungi important different sector pharmacological studies and pharmaceutical industry it also focused on the Invitro Antagonistic Activity of Endophytic Bacteria of *Oryza sativa* Against Soil-Borne Fungal Pathogen *Fusarium oxysporum*, Redefining the Relevance and Efficacy of Microbial Biocontrol Agents Against Phytopathogens, Diversity and Distribution of Endophytic Fungi, An Overview of Endophytic Fungi Secondary Metabolites and their Novel Applications, Mycelial Bricks- Building Blocks For the Future, Isolation of Endophytic Microbes From *Acacia pennata* (L.) Willd. And their Antifungal Activity Against *Rhizoctonia solani* Kuhn, Diversity of Corticioid Fungi Belonging to order Agaricales. The quick and fascinating advancements in the taxonomy, cell and molecular biology, biochemistry, pathology, and ecology of fungi are taken into consideration. Natural functions are combined with characteristics of taxonomic significance, including their applicability to human affairs. The biology and management of human and plant pathogens are given particular attention, forming an important link between basic and practical mycology. Its covered the topic on beneficial effect of mutualistic interaction between salmonella and aspergillus, fungal culture, habitat with special reference to disease causing agents, nutritional value of *Agaricus bisporus*, its potential use and health benefits in chicken farming, mechanisms of endophytic fungi used in plant protection , comprehensive review on bioluminescent fungi, mycology a detailed examination: in contrast of present and future scope of mycology, arbuscular mycorrhizal fungi act as natural biofertilizers in sustainable agriculture, predaceous fungi: an overview, post-harvest fungal disease and its management on *Allium cepa*, nematophagous fungi – a review, role of fungi in bioremediation of pollutants, fungal metabolites with anticancer activity,

fungal tannase: the most eminent biocatalyst for industrial applications, special emphasis on the study of medicinally important genera -*Permelia*, *Cetraria*, *Cladonia* and *Usnea*.

The Present book supposed to includes Fungal Biology, Plant Pathology, Myco-medicinal, Mycoremediation, Fungal Degradation, Environmental researches and many more. This book emphasized all branch area of research of fungi macro fungal and micro fungal. It covers general aspects of fungi, their beneficial roles, harmful roles, medicinal aspects etc.

Therefore, the present book on “Research in Mycology” has been envisaged in order to discuss various aspects of Mycological Research. Editors express sincere thanks to all the authors for contributing their ideas and knowledge in the form of book chapters. Last but not the least; Editors are highly grateful to “Blue Duck Publication” for bringing out this book in a beautiful way. Editors hope this book is helpful in academic as well as research and widely read and reach to its target audience.

Editors
Research in Mycology
Vol. 2

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ROLE OF FUNGI IN BIOREMEDIATION OF POLLUTANTS

Dr. Jahanarah Khatoon

Abstract

Human conscious attempts to achieve a sustainable approach towards purification and restoration of polluted habitats by cleaning up contaminated soil and water by use of organisms—including fungi, bacteria, and their enzymes is a cost-efficient, sustainable, and natural approach (in comparison with other typical techniques). Incineration is one of the most effective and common remediation practices, however it is associated with a number of shortcomings. Bioremediation is biologically mediated process used to remove/ neutralize an environmental pollutant from contaminated sites. Bioremediation seems to be one of the promising alternative and safer treatment strategy as compared to incineration. Fungi being natural decomposers of waste matter and secrete several extracellular enzymes, capable of decomposing lignin and cellulose, (essential components of plant fiber), are considered as potential candidates of bioremediation. Fungi possess robust and diverse metabolic capacities to break down complex and recalcitrant organic material present in nature. Mycoremediation, is term used for remediation by fungi. Mycoremediation, is term used for bioremediation by fungi. This book chapter provides an overview of bioremediation and focusses on microbial process because the cycling of organic compounds in the environment is an important part of bioremediation.

Keywords: *Bioremediation, Fungi, Mycoremediation, Enzymes, Environmental Pollutant.*

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