M. A. KHALID, D. S. MALIK, R. A. BALIKAI,
BASEEM TAMINI, K. K. YADAV & P. R. YADAV *Editors*

ENVIRONMENTAL PROBLEMS, PROTECTION AND POLICIES

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This book on "Environmental Problems, Protection and Policies" goes on to highlight the unfavourable conditions created by the human approach to nature. In other words, this book highlights what environmental pollution is! It can be understood how important the issue of environmental pollution is in the situation where even the air we breathe is threatened with pollution. The book contains 30 chapters encompassing different aspects of environmental problems, protection, and policy issues. This book summarizes the Green technologies for sustainable development, Soil pollution, Microplastic pollution in the aerial, soil and marine ecosystem, Plastic pollution, Water pollution, Ozone layer depletion, Biodiversity loss, Air pollution, Marine pollution, Deforestation, Acid rain, Environment degradation and disasters, Human impact on the environment, Pollution and its impact on animal and human health, and Light pollution as the driving force behind loss of biodiversity.

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AMELIORATION IN WATER QUALITY OF AQUATIC ECOSYSTEMS CONTAMINATED WITH INORGANIC POLLUTANTS: APPLICATIONS OF PROMISING PHYTOREMEDIATION TECHNIQUE

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ABSTRACT : Water the elixir of life has a unique role in sustaining the life of on earth. Increase in water contamination with inorganic pollutants has become a serious concern nowadays due to the increasing unsustainable developmental activities. Production processes carried at high energy inputs, discharge of untreated municipal and industrial wastewater coupled with runoff from agricultural fields leads to the build-up of toxic inorganic pollutants like heavy metals and reactive nitrogenous species (RNS) into the water bodies. Intake of water contaminated with heavy metals and nitrogenous ions (nitrate, nitrite and ammonium) by humans and other life forms causes disruption of numerous metabolic activities which can lead to neurological, cardiovascular, renal and other ailments. Of the technologies available for remediating contaminated water, phytoremediation using aquatic plants is promising because of its low cost compared to conventional physical or chemical methods, fewer negative effects and suitability for removal of pollutants on a large scale. Water remediation by macrophytes can be greatly enhanced by selection of appropriate plant species which is based on the types of elements to be remediated, the geographic location, microclimate, hydrologic conditions, known accumulation capacities of the species *etc*. Phytoremediation is an economical, eco-friendly and aesthetically pleasing technology that makes the use of plant systems to remove and/or detoxify pollutants from the water environment.

Key words : Heavy metals, reactive nitrogenous species (RNS), wastewater, phytoremediation.

Introduction

Water quality management needs immediate attention, keeping in view the problems associated with water pollution at regional, national and global levels (Shah and Singh, 2016). Since water bodies serve as the source of potable water for irrigation and for other domestic purposes, therefore, checking the entry of pollutants into the water bodies helps in protection of human health and aquatic ecosystems itself (Agca *et al*, 2014). Aquatic ecosystems are subjected to a plethora of increasing levels of toxic inorganic contaminants due to anthropogenic activities. Various pollutants are finding their fate into aquatic systems which arise from point sources (sewage, industrial effluents, *etc*.) and from non-point sources (agriculture, urban,