

Phytoremediation: An Eco-Friendly Solution for Environmental Contamination

Chandni Asha Syamlal, Arvind George, D. Sayantan*

Department of Life Sciences, Christ (Deemed to be University), Bengaluru, Karnataka, India
chandni.as@res.christuniversity.in, arvind.george@res.christuniversity.in, sayantan.d@christuniversity.in
Corresponding Author: D. Sayantan

Abstract: *Phytoremediation, the process of using plants to clean up environmental pollutants, is becoming increasingly popular due to its eco-friendly nature, sustainability, and cost-effectiveness. This research delves into the potential of phytoremediation in handling different types of pollution, such as heavy metals, radioactive substances, pesticides, and organic chemicals. We explore the inner workings of phytoremediation, shedding light on mechanisms like phytoextraction, rhizofiltration, phytostabilization, phytodegradation, and phytovolatilization. Our research also delves into the genetic and molecular structures that enable these processes in various plant species. Despite its promise, phytoremediation has its hurdles. For instance, there's a risk of bioaccumulation, and the method can only treat a limited selection of contaminants effectively. Our study ends with a look at the future trajectory of phytoremediation, placing special emphasis on the potential role of genetic engineering in amplifying its effectiveness and broadening its scope. Ultimately, our research underscores that, when employed properly, phytoremediation can provide an eco-friendly solution for handling and rehabilitating polluted sites. This contributes to the broader goal of sustainable development and preserving environmental health.*

Keywords: Bioaccumulation, Contamination, Environmental Health, Genetic Engineering, Sustainable Development