

Endophytes: An Indicator for Improved Phytoremediation of Environmental Pollutants

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Phytoremediation has been described as an efficient method through which chemical hazards can be removed from the soil; however, it suffers various limitations that has prevented full field application of the technique. Plants lack the metabolic enzymes required for complete pollutant remediation and this often results in slowing the rate at which phytoremediation occurs. Such inherent limitation of plants for complete remediation of xenobiotic compounds calls for harnessing the ability of endophytic microbes to enhance the degradation of toxic compounds. Various plants have been implicated in this new line of biotechnology. While most of them overcome the inherent limitations, others are unable to achieve effective remediation of contaminated soils. This study provides an in-depth analysis of various endophytic-assisted phytoremediation studies on organic contaminants. It also highlights the diversity of contaminant-resistant and degrading endophytes and the role of these microbes in maintaining a clean environment, and explains how plant-endophyte relationships can be exploited for improved phytoremediation. Hence, the study suggests better alternative plants for phytoremediation of organic contaminants based on the type of contaminant and the intending remediation protocol to be followed.