A Natural and Cost-Effective Process of Bioremediation for Contaminated Soils

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I was inspired to commence this experiment after reading an alarming statistic; due to hydrocarbon pollution, Australia declared 80,000 soil sites contaminated, Europe 3 million sites, and the United States 1,300 soil sites. After researching the adverse effects hydrocarbon pollution has on plant health, which in turn is devastating to humans, I attempted to find a solution. I began brainstorming soil remediation methods. I discovered various remediation methods, however, many of them are not efficient for commercial land and most were chemical-based. This pushed me to develop a natural bioremediation method, as farmers in poverty-stricken areas do not always have access to chemical methods. After discovering that mycelium possesses hydrocarbon-remediating properties and that bacteria have been used in trials to remove nuclear waste from soil, I wondered if I could combine the properties of mycelium and hydrocarbon-consuming bacteria to be a natural and effective bioremediation process. To perform this test, I contaminated soil with 5% of the volume of the available soil, measured the hydrocarbon quantity for soils receiving and not receiving the bioremediation method, and planted plants to determine the physiological effects of remediated and non-remediated soil. This experiment lasted for 79 days. At the end of the experiment, my hypothesis proved true; the Marinobacter bacteria and mycelium strains from L. edodes absorbed and ate the hydrocarbons in the soil and remediated the soil. The research done can aid many people. With my invention, this will be one step towards solving the hydrocarbon soil pollution problem.

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