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The Study of Soil Remediation on Soil Respiration

Oil pollution is a developing challenge affecting the U.S. but more dangerously, the whole environment. Recent oil spills have eliminated vast miles of land due to long exposure and severity of the substance. A solution to revitalizing the soil is bioremediation, which aims to quicken the rate of pollutant degradation. In this experiment, we are focusing on the ability of nutrients to accelerate the purification process by increasing microbial decomposition of a C-rich contaminant-oil. By applying different dilutions of nutrients we can determine at which dilution soil respiration is greatest; therefore, increasing the rate of soil remediation. A series of hypotheses were created to understand the relationships between different groups in terms of CO₂ respiration. 18 soil samples were made containing different concentrations of nutrients. Soda lime was utilized to measure the CO₂ respiration. After collecting CO₂ respiration with a formula, I ran some statistical analysis to observe different relationships. Results indicated that the higher the concentration the more the CO₂ respiration. The difference between control and experimental groups, nutrient and bacteria groups, and dilution and group were significant. This indicates that all these groups influence soil respiration; therefore affecting bioremediation. Accelerating the rate at which pollution-eating microbes degrade pollutants is very important to improving the environment. The less time the oil is integrated into the soil the better off the environment and general public are. By understanding the mechanics behind bioremediation, we can more effectively treat environmental disasters in a more acceptable window of time, thus minimizing irreversible damage.