Environmental Engineering in the Manufacture of Technology-Enhanced Bioplastics and Its Impact Study

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BACKGROUND: Plastices have become commonplace manufacturing materials that find applications in avariety of industeies . However, this conversion produces pollutants and greenhouse gases such as carbon dioxide (CO2), thus contributing to environmental pollution and global warming . Moreover, several petroleum-based plastics are nonbiodegradable, which leads to their persistence at the site of disposal and harms the environment. Over two recent decades, several studies have suggested alternatives to the conventional petroleum-based plastics. OBJECTIVES:The study aimed to search for an alternative to industrial plastics from available environmental materials using natural polymers. METHOD & MATERIALS: The study sample consisted of making bioplastics from natural polymers from environmental materials available in Oman. The project followed the method of experimentation and analysis with clear scientific foundations RESULTS:Different bioplastic films were prepared with different concentrations of additives from Oman nature(Palm tree sugar, Frankness, Omani gum) acted as a control. Bioplastic was produced in multiple ways and with different flexibilities. We found that Bio- Nonoplastic packaging by applying a layer using spray based Bio-Nanoplastic can act to reduce mold and external environmental influences. Anti-moulding refrigerator which pump Bio-Nano plastics can be a promising project .We found that soil enrichment with bioplastic waste , act as fertilizer and increase the speed of Plants' growth. Bio-Nanoplastic also can be used to reduce transpiration and water evaporation in summer, especially in hot countries, so that it preserves the amount of water in plants.

Awards Won:
Fourth Award of $500