BIO BATTERY FROM AGRICULTURAL WASTE

Abstract

The increasing demand for sustainable energy solutions has driven research into bio batteries that utilize agricultural waste as a renewable energy source. This study explores the development of a bio battery that converts organic waste into electricity using microbial fuel cells (MFCs). Agricultural residues such as fruit peels, crop husks, and food scraps serve as a rich source of organic compounds that microbes break down, releasing electrons in the process. These electrons flow through an external circuit, generating electrical power.

SDGs:

The proposed bio battery aligns with multiple Sustainable Development Goals (SDGs), including SDG 7 (Affordable and Clean Energy), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action) by promoting waste-to-energy conversion, reducing environmental pollution, and offering a sustainable energy alternative.

Concept :

The system consists of an anode chamber, where organic matter is broken down by microorganisms, and a cathode chamber, which facilitates electron acceptance, completing the circuit. The electrolyte medium enhances ion transfer, ensuring efficient energy conversion.

Key advantages:

This bio battery include its eco-friendly nature, cost-effectiveness, and ability to generate electricity from biodegradable waste, making it ideal for rural and off-grid areas. However, challenges such as low power output and optimization of microbial activity need to be addressed for large-scale implementation. This research highlights the potential of agricultural waste-based bio batteries as a green energy solution, contributing to a circular economy and a more sustainable future.