

Abstract

As the global food industry feels the growing pressure of climate change, there is an urgent need to move away from resource-heavy production and toward efficient bio-factory systems. Grape King Bio Ltd. is addressing this challenge by making liquid fermentation technology the center of our strategy. By focusing on these advanced methods, we are able to meet international climate standards like TCFD and SBTi while transforming environmental risks into a sustainable advantage for our business.

The path toward a net zero future relies on a closed-loop system that prioritizes precision fermentation, waste transformation, and digital management. Liquid fermentation technology allows us to develop fungal-based meat alternatives, which help lower greenhouse gas emissions and reduce the need for land-intensive livestock feed. Every part of the liquid fermentation process is used effectively; for instance, fermentation for high-end functional supplement product residue is repurposed into high-value animal feed to support local farmers, while real-time digital tools monitor and minimize error production and improve energy efficiency.

Innovation is a key part of our environmental commitment. By partnering with academic institutions, we can integrate seawater into fermentation processes or coupled wastewater treatment with microbial fuel cells. The wastewater project allows us to remove organic pollutants while generating electricity, providing the dual benefit of cleaner water and renewable energy. We also extend these standards to our partners. We currently evaluate more than 250 suppliers based on their ESG performance, and we aim to include all our outsourced manufacturers at local to reduce transportation carbon footprint. By providing technical guidance and using green procurement practices, we help our entire supply chain become more efficient.

These initiatives are grounded in rigorous scientific evidence and a commitment to measurable outcomes, positioning us for success at the National 2025 Sustainable Development Awards. To date, our focus on resource management and innovation has resulted in 328 projects and patents, along with 350 national awards. By proving that functional food production can grow without increasing its environmental footprint, Grape King Bio is establishing a practical model for a more sustainable food industry.