



ECO-STARTUP DEVELOPS NATURAL CROP NUTRIENTS FROM MARINE ALGAE

Neptunus Biotech

Mexico



Dr Leopoldo Herrera

As the planet's main providers of oxygen, photosynthetic microorganisms share structural similarities with crops. Bioactive compounds extracted from different species of microalgae can be deployed in unique formulations at each stage of a crop's lifecycle. They support plant growth while countering the deficiencies caused by drought, synthetic pesticides, and other harmful factors.

This sustainable solution does not contain solvents or heavy chemicals, boosting crop resilience while improving ambient air quality. By maximising overall yields, Neptunus Biotech contributes to the UN ambitions of achieving zero hunger by 2030, while replacing synthetic pesticides and fertilisers, alongside reducing land degradation, contributes to the target of ensuring sustainable consumption and production patterns.

Leopoldo has cultivated strong working relationships with companies across Mexico, alongside universities in the UK and United States. Having completed commercial trials, Neptunus Biotech is now upscaling its production systems to meet burgeoning demand and building partnerships with distributors. Already active across Mexico and Ecuador, the company plans to expand into other Latin American countries where volatile climates and reliance on artificial fertilisers have adversely affected yields, solving agricultural challenges in a rapidly changing environment.





There is growing concern about the vulnerability of crops amid our changing natural environment, especially since the UN reported in 2022 that one in ten people worldwide currently live in hunger. Under the guidance of Dr Leopoldo Herrera, Neptunus Biotech has developed a radical way to produce sustainable and environmentally friendly crop nutrients using marine microalgae. These molecules increase the resistance of crops to environmental stresses, while the extraction process reduces atmospheric levels of CO₂.

“I loved being able to network with people who share the same mentality and goals, even though we were from different countries,” said Leopoldo. As an alumni of the University of Manchester, he has forged strong working relationships across the UK, where Neptunus Biotech is based. Ongoing mentoring has also been hugely beneficial: “One of the greatest things the LIF programme gave us was follow-up mentorship, enabling us to continue challenging and focusing on the right things at the right moments.”

Leopoldo highlights the importance of technical advisors in facilitating Neptunus Biotech's future growth and planned expansion across foreign markets. “We could have the best product in the world, but if we don't have someone to help the client use it effectively, it wouldn't work. Our business model works around putting people in the right places to make recommendations to the farmers; from there, our products work by themselves. We're nothing without our people.”

The Royal Academy of Engineering's Leaders in Innovation Fellowships (LIF) programme supports talented entrepreneurs from around the globe to turn their engineering innovations into impactful, sustainable businesses.

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