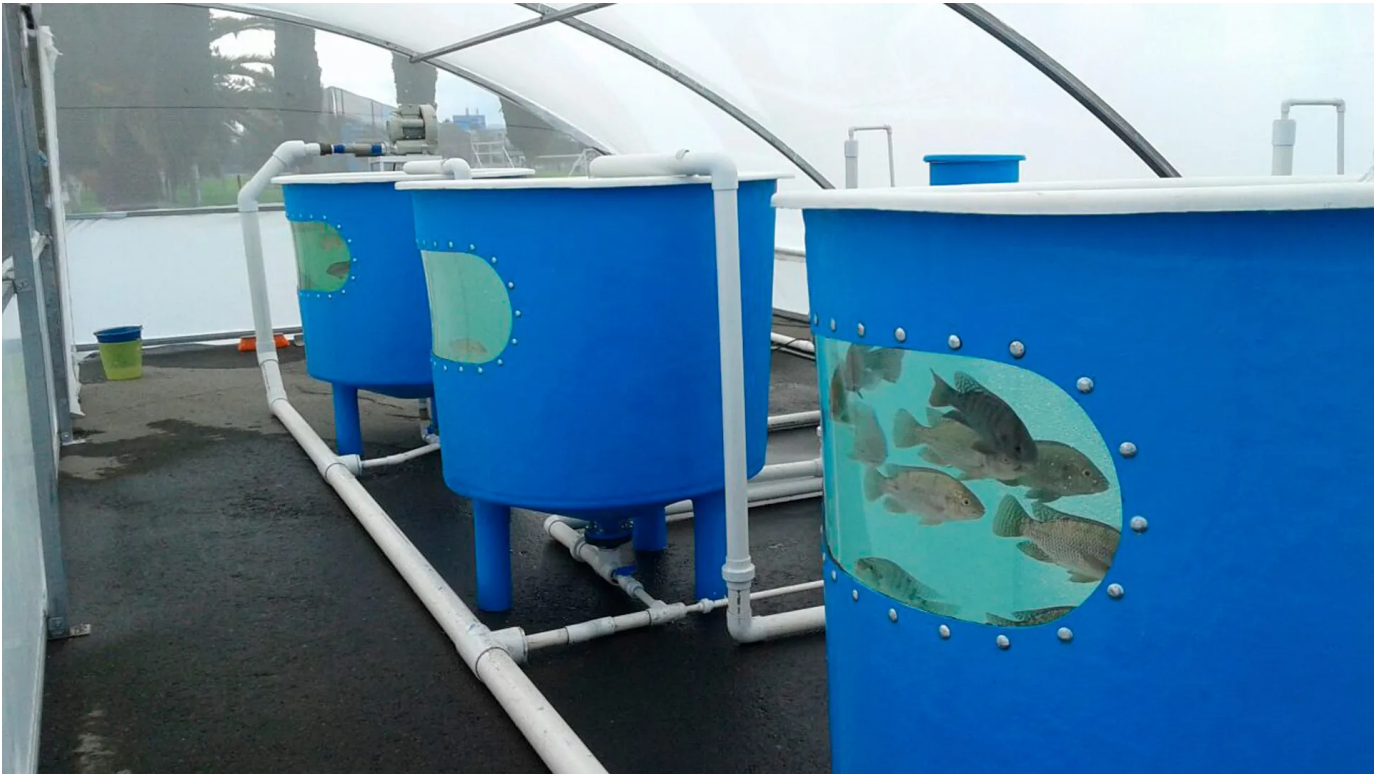


Tec and University of Maryland collaborating on aquaponic systems



Introducing UMD-TEC Aquaponic Systems: a project capable of improving food and nutrition indicators to the benefit of sustainable development.

22/10/2021

Rigoberto Engel

The UMD-TEC Aquaponic Systems project is about the design of **aquaponic systems** developed by [Tec de Monterrey](#), in collaboration with the [University of Maryland](#), to promote their use in **education, research, and community participation**.

Rigoberto Engel, who holds a degree in Biochemical Engineering of Aquatic Resources and teaches at PrepaTec on **Hidalgo campus**, and **Fernando Uría**, a Tec graduate in Business Administration and Management, share with CONECTA their experience with this **social and environmental impact project**.

According to Professor Engel, the project consists of implementing **control systems** to use **biosensors** for monitoring **water quality** in real time and also improve

control processes in the **production** of **fish** and **vegetables**.

"It's about designing systems for the production of food with the sustainable use of water, which allows our country's communities to empower themselves and promotes their social and economic development," said Professor Engel.



Collaborating with the University of Maryland

To carry out the the project, the University of Maryland used its **aquaponics** facilities and equipment, while the **Tec's Hidalgo campus** provided the facilities for its commercial **water recirculation** systems.

The engineer pointed out that, in both systems, **water quality sensors were installed** in the **fish** and **crustacean culture** tanks, which made it possible to monitor aspects such as temperature, pH, and dissolved oxygen parameters in real time.

“A connection established over the internet allowed the UMD and Tec to see data from both systems simultaneously.”

He added that having **access** to water quality data allowed them to share information on the **value, manufacture, operation, and management** of **aquaponic** systems.

Meanwhile, The Tec graduate from Hidalgo campus said that his work on the project was based on contributing to the **design** of the system, as well as the tasks of **measuring chemicals** in the water.

Over the course of the project, Tec de Monterrey specialists such as **Dr. Roberto Parra Saldivar** and teachers **Yéssica Contreras Fuentes** and **Astrid Garnica Correa visited** and **collaborated**. Participating on behalf of the UMD were **Dr. José Luis Izursa, Dr. Shannon Potter Dill, and Dr. Jennifer Shaffer**.

Background: the beginning of a transformation

Professor Engel said that he received an invitation from Dr. José Luis Izursa in **October 2017** to participate in the **[“UMD and Tecnológico de Monterrey Award Seed Grants for International Research Collaborations.”](#)**

Only **six out of twelve** nominated projects were selected, **UMD-TEC Aquaponic Systems** being among the winners.

“In January 2017, we were selected as one of the Tec de Monterrey projects that are transforming Mexico,” said the engineer.

Fernando said that he was interested as soon as Professor Rigoberto invited him to join the project because he saw its **great potential** to contribute to **transforming lives**.

"I've always had an avid interest in projects with high social and economic impact, and the "Aquaponic Systems" project immediately caught my attention," says Uría.



Project experience and visualization

The Tec graduate said that, together with the entire work team, he had an **enjoyable** and **meaningful experience**. Working on a project which would have

such an enormous **social impact** gave **meaning** to the task.

Fernando added that the project **broadened his horizons**, contributing to his **personal and academic development**, so much so that he is currently focusing his activities and ideas on making a true **economic** and **social impact**.

“I consider it a turning point in how I saw the world and social responsibility.”

Professor Engel said that he sees UMD-TEC Aquaponic Systems as a **more developed** and **comprehensive** project, which could be implemented on other Tec campuses.

Fernando shares that the project has enormous potential to change the **circumstances of communities** that aren't so fortunate and that in the future it could integrate more **productive elements**, maintaining its **social significance** and its **impact on the environment**.

“Most importantly, I learned that even a project with an apparently simple concept has the capacity to transform lives,” he concluded.

Tec de Monterrey's Sustainability and Climate Change Plan

Through the **2025 Sustainability and Climate Change Plan**, Tecnológico de Monterrey wants to make a national and **international impact**, tackling **climate change** and the **global environmental crisis** through decisive action.

Currently, the Hidalgo campus researchers are reaching out to the **Biotechnology Center** on Monterrey campus and the **Tec's Sustainable Development and Outreach Department** to join this Plan.

ALSO READ: