

## **Researches on the potential conversion of conventional fish farms into organic by establishing a model and good practice guide**

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The present project (MSCA-RISE Proposal Number: SEP-210167261Proposal Acronym: COFISH) has contributed to increase of sustainability and profitability of intensive and semi-intensive aquaculture farms by integrating aquaponics techniques and technologies.

Sustainable development is undoubtedly the desideratum of every industrial activity and, therefore, of aquaculture. In this context, the project objective is included within the national and international development strategy of the aquaculture sector.

Aquaponics production techniques ensure the sustainability of aquaculture, contributing to the conditioning of the technological water quality through bio-phytoremediation processes

The activities of this project started with a series of social studies aimed at assessing the level of knowledge and, at the same time, the opinion of the people directly involved in the production activity of the aquaculture industry. Based on these results, an action plan structured on social, technical and technological ideas, targets the increasing of aquaponics systems popularity and their development, by developing turn-key solutions for current and future entrepreneurs.

The project also required experiments, both on a laboratory scale and on an industrial scale, which aimed to establish clear coordinates for the design and construction of integrated aquaponics systems as well as the synchronization of technical and technological solutions.

Thus, integrated aquaponics systems have been developed, based on various types of aquaponics techniques, such as DWC (deep water culture), NFT (nutrient film technique) or substrate aquaponics technique, and various types of aquaponics substrates (light expanded clay aggregate - LECA, substrate of volcanic rock). Growth technologies for plant and fish biomass have been optimized, achieving a balance between input and output of nutrients at the production system level.

A cost-benefit analysis and a hub have been developed to centralize the data obtained in order to make predictions of an economic nature.

The originality of the project is complemented by its multidisciplinary character, for which it is necessary to provide a research team specialized in various fields, whose experience has generated a new product, in this case an acvaponian turn-key production

platform, simultaneously with obtaining technical indicators necessary for the socio-economic development and interpretation of the results obtained.