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Smart Aquaponics: Development of a tool for education, decision support & monitoring for aquaponics

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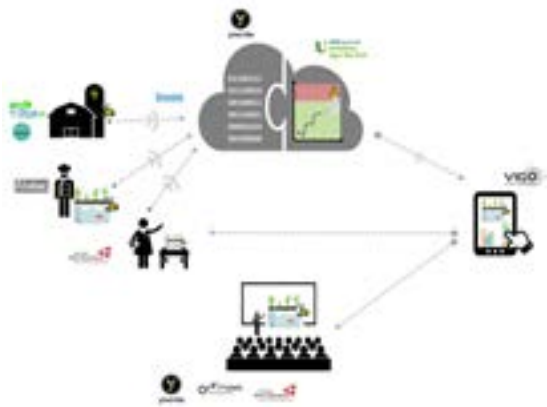
Smart Aquaponics is an Interreg project (France, Wallonia & Flanders) aiming at promoting aquaponics among local communities and the corporate sector. Three digital tools will be proposed through an application (smartphone and PC): a training program, a decision support tool and a monitoring tool. The training program will be composed of a serious game and several theoretical modules. The game will allow the user to handle virtual aquaponics systems with different levels of complexity and experiment an extensive range of events occurring in real aquaponics systems. The target groups are technical secondary schools, colleges, universities and local communities. The decision support tool will allow users to compose virtual aquaponics systems and perform simulations. These simulations will estimate the yield, efficiency and stability of the systems and, finally allow fine-tuning the designs. The monitoring tool will monitor the status of the different component of an aquaponics system in order to (i) anticipate potential problems (ii) maintain the parameters in an optimal range. The monitoring is based on connected sensors (pH, t°, nitrogen) and will be compatible with small and semiprofessional systems. These tools will be based on a model that predicts the evolution of different parameters (oxygen, nitrogen, and plant and fish growth) of the component of an aquaponics system. The specific nature of this model lies in its ability to model aquaponics systems of different sizes and designs. Moreover, the model will be improved by the data provided by the user of the monitoring tool.



Biography

Pierre Raulier has completed his PhD in quantitative genetics in 2015 at Uclouvain (be). The exploration of the genetic diversity of different species led him to develop a strong interest in the diversity of the cultivated species and for different types of sustainable agriculture. Then after, he made one year of research on strawberries and another year within a development cooperation project on potato cultivation in China. He is now working at the Faculty Gembloux Agro-Bio Tech (Be) on two projects aiming at fostering the development of two types of sustainable agriculture: Aquaponics (www.smart-aquaponics.com) and rooftop Farming (www.groof.eu).

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