WATER SAVING AND SUSTAINABLE FOOD PRODUCTION

How innovative aquaponic systems contribute

INAPRO challenges the concept of recent water, energy and nutrient management solutions in rural and urban areas to cope with global demands and to exploit all available opportunities of resource efficiency. Its key technology is aquaponics.

AQUAPONIC SYSTEMS

An aquaponic system couples the production of aquatic animals (e.g. fish) and plants (e.g. vegetables) in greenhouses. The wastewater from the aquaculture section is used for the nutrition of the plants. This saves water, energy and further resources compared to single greenhouse or single fish production systems.

Despite the fact that integrated acquaponic systems lead to powerful synergies between fish and plants, they have not spread out to the market until now. INAPRO addresses this problem.

The consortial partners aim to achieve a real breakthrough towards commercialization by a model-based optimisation of special aquaponic systems as well as the integration of cutting edge technologies. This scientific work is supported by extensive dissemination activities addressing all stakeholders.

FACING SOCIETAL CHALLENGES

The rising demands of a growing world population will put increasing pressures on water resources, land use and ecosystems. The European Commission promotes integrated approaches to food security, low-carbon energy, sustainable water management and climate change mitigation.

INAPRO addresses these demands by optimising reusable water, nutrient and energy flows, and consequently by minimising the environmental impact.

The project demonstrates a solution for a nearly emission- and pesticide-free production of healthy food with a significantly reduced water and carbon footprint while keeping optimum productivity in both parts of the system (aquaculture and horticulture).

INAPRO contributes to the recent EU strategies under the new Horizon 2020 framework by facing the challenges of the dramatic water resource situation in Europe and worldwide.

Any questions?

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DEVELOPING MARKET ACCESS

Currently existing commercial approaches of aquaponics vary to a large extent in size, complexity and technologies used, often still lacking stability, technical and technological standardisation, sustainability and economic profitability. INAPRO helps to overcome these limitations by developing standardized modular solutions scalable and adaptable to local conditions.

The communication and transfer of this new knowledge within a well-developed network of stakeholders from policy, science, industry, organisations and consumers will open new market opportunities.

WIDENING APPLICATION

For the broadest application and dissemination of the INAPRO technology, the new systems will be applicable in a wide range from rural large-scale agricultural facilities to small urban farming kits. To prove the concept under different geographical and climatic conditions, the demonstration plants will be located in different regions of Europe and Asia (Germany, Belgium, Spain and China).

AQUACULTURE

The EU seafood consumption amounts to 13.2 million tonnes; of this, 25% comes from EU fisheries, 65% from imports, and 10% from EU aquaculture (STECF). Developing aquaculture in Europe is a question of food security, as well as a means to ensure a better traceability of the seafood present in the EU market. This is why the European Commission published in 2013 the Strategic Guidelines for the sustainable development of EU aquaculture. According to the Commission, aquaculture can also be a tool to combat overfishing. INAPRO follows this strategy by developing a sustainable system combining aquaculture and horticulture.

"There is a limit to what our capture fisheries can sustainably produce. Aquaculture can help filling this growing gap in a sustainable way"
-- European Commission --

RESOURCE EFFICIENCY

"Floods, water scarcity and droughts have enormous environmental, social and economic impacts. Insufficient water quality levels pose threats for public health and biodiversity and the supply of safe drinking water and sanitation still poses problems, within Europe and outside. To sustainably manage these increasing pressures, new and innovative approaches are needed."
-- EIP Water --

Traditional agricultural areas with water scarcity could benefit most by moving to new aquaponic technologies which guarantee an effective use of water and energy. One crucial point of the INAPRO concept-based demonstration activities is to reveal the viability of this resource-efficient water, energy and nutrient management technology. It combines optimum productivity for both, fish and vegetables, adds value chains, and minimises negative impacts on the environment by intensely reusing nutrients, CO_2 and freshwater.

INAPRO

Innovative model & demonstration-based water management for resource efficiency in integrated multitrophic aquaculture and horticulture systems

Instrument: ENV.2013.WATER INNO&DEMO-1 Water innovation demonstration projects
Project Coordinator: Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB), FORSCHUNGSVERBUND BERLIN e.V. - Dr. Georg Staaks

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