



RichWater



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First application and market introduction of combined wastewater treatment and reuse technology for agricultural purposes



GENERAL INFO



Circular Economy



Irrigated Water Management



Sustainable Development



Closing the loop

There is a growing concern throughout the EU regarding **water scarcity** and the significant impacts on water resources by agricultural activities. Especially in Southern Europe, water scarcity already leads to severe conflicts between different water users. In some Mediterranean areas, irrigation water is estimated to account for up to 80% of total water abstraction.

The European agricultural sector is also facing **serious risks** such as **nutrient availability**, the **growing demand for food and biofuels** and the increase of **extreme weather** events due to climate change. Meanwhile, nutrient-rich wastewater runs untreated and unused in our surface water bodies causing environmental damages (e.g. eutrophication or groundwater pollution) and health risks.

Therefore, the use of **"reclaimed water"** (i.e. treated wastewater) can be an alternative water resource for agriculture. Water and nutrients contained in reclaimed water can be used for different purposes instead of being discharged to the environment. The technology developed in RichWater project is a **ready to market** advancement of the Treat&Use system, a successful EU research project (FP7) approaching the **safe and economic reuse of wastewater in agricultural production**.



OBJECTIVES

- **Demonstration of a modular ready to market wastewater reuse system** producing a **pathogen-free** (99% of E. Coli removal) and **nutrient-rich effluent** (presence of NPK according to crop needs) for direct application in a real fruit and vegetable production-site in a water scarce region (Southern Spain).
- **Tackle market entrance barriers** by standardisation and certification of the RichWater modules within the ETV Pilot Programme, and by developing in depth market assessment and business plans for Spain, Greece, Turkey, Italy and the MENA region and designing competitive marketing and finance strategies.
- **Assessment of potential benefits and risks** of the near-market prototype for the environment and human health.
- Ensure that **crops irrigated with reclaimed water** have sufficient **quality standards** for farmers and customers.
- **Reducing the environmental impacts** of untreated wastewater (e.g. eutrophication).
- **Reduction of freshwater and fertilizer consumption** in water scarce areas of the Mediterranean.
- **Reaching low energy costs** for water treatment and reclamation.



TECHNOLOGY

RichWater technology is the result of more than **5 years of research and innovation** led by BIOAZUL. Within the 6th Framework Programme, PURATREAT and WACOSYS projects developed the individual modules which were further implemented in the pilot plant of TREAT&USE project. In **TREAT&USE** an **integrated solution for water treatment and irrigation** was demonstrated in a 2,700 m2 field of tomatoes located in South Spain. Irrigation water quality fulfilled the **legal requirements** for wastewater reuse and the system enabled farmers to **easily adjust the amount of nutrients** supplied to the plant. RichWater will upgrade TREAT&USE pilot plant **optimizing the system functioning and upscaling the prototype** which will be tested in a plantation of tomatoes and sub-tropical crops (e.g. mangos and avocados) in the region of La Axarquía (Málaga). The project's goal is to demonstrate the **technical and economical viability** of the developed system. This would permit to reach the **last stage in the innovation and development cycle** before entering industrial production and markets.

- **Wastewater treatment:** The core is an adapted low-cost MBR water treatment system, which provides a safe but nutrient rich effluent adequate for irrigation.
- **Monitoring and control unit:** Soil sensors are placed in the root zone, constantly analyzing moisture content and nutrient concentration. The data is digitalised and transferred to the Automatic Monitoring and Control Station.
- **Mixing unit:** The mixing module ensures demand driven irrigation adopting the appropriate concentration of nutrients by mixing clear water and treated wastewater according to the information received from the monitoring module.
- **Fertigation station:** The irrigation unit is integrated in the system so that the effluent of the MBR can be directly used in agriculture with an adapted technology optimized for the use of treated wastewater.



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