



## TREAT&USE: REUSE OF WASTEWATER IN AGRICULTURAL PRODUCTION

Through the work of six European SMEs in the technical and agricultural sectors and a research centre, the "TREAT&USE" project tested and disseminated the **economic viability and technical feasibility of an efficient wastewater treatment method and the direct reuse of the resulting water and nutrients in agricultural production** with minimal operating and maintenance costs.

The project was based on the **successful technical and scientific results of two previously completed European projects (PURATREAT & WACOSYS)** dealing with wastewater treatment, reuse technologies, fertigation and monitoring systems.

The PURATREAT project's membrane bioreactor (MBR) performed successfully and managed to attain a significant **reduction in energy consumption (90% less than reverse osmosis systems)**. The MBR prototypes were tested on a laboratory scale and produced an effluent which was unfit for consumption but was an **outstanding option for irrigation and fertilisation** (since it was rich in nutrients like nitrogen and phosphorus and free from pathogens). In the WACOSYS project, the use of treated wastewater for agricultural production was satisfactorily applied and monitored.



### THE TREAT&USE PROJECT ALLOWS TREATED WATER WHICH FULFILLS THE REQUIREMENTS LAID BY ROYAL DECREE 1620/2007 TO BE USED FOR FERTIGATION

A **pre-sales prototype** was built and placed into production in the TREAT&USE project. It combined the **treatment of substantial amounts of urban wastewater through an MBR system with the direct and safe application of effluent to irrigate and fertilise agricultural crops**. The project thus managed to apply and demonstrate the know-how acquired and the tools generated by the PURATREAT and WACOSYS projects.

The **pre-sales prototype** was equipped with an **automatically controlled feedback unit based on soil sensors** in order to measure this technology's performance and benefits.



## OBJECTIVES

- Provide a **safe technology solution** for the reuse of wastewater in agricultural production.
- Develop an **approach which allows wastewater to be reused** and nutrients to be recovered.
- Develop and test a **pre-sales wastewater treatment prototype** and apply wastewater to agricultural production.
- Identify the **nutrients needed in the soil through sensors** and adapt the necessary dosage of treated wastewater in real time.
- Assess this **prototype's potential benefits and risks** for the environment and human health.
- Reduce **energy consumption** of an MBR reactor by 1 kWh/m<sup>3</sup>.

## RESULTS EXPECTED

- Crop production and performance **results were equivalent** when using treated wastewater and clear water.
- The use of an alternative water source for irrigation enabled savings to be made on **valuable water resources** (like aquifers).
- Low pathogen values in the water and fruit proved the TREAT&USE technology's **reliability** regarding the reuse of wastewater in agriculture.
- The prototype can be designed on a larger scale to reach greater production rates and its **use is feasible in the food industry**.
- It is technically possible to use wastewater from the sewage network and **achieve the quality required by legislation**.
- The use of wastewater **reduced the need for additional fertilisers**. In the case of the TREAT&USE project's tomato plantation, there was no need to use any additional fertiliser.
- The system's **simple maintenance and automated control** makes it easy for end users to operate without the need for extensive technical experience.

## PROJECT DATA

**Web:** [www.treatanduse.eu](http://www.treatanduse.eu)  
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**More info:** CORDIS-TREAT & USE

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