

PARTNERS

The CLEANLEACH Project has been launched through the collaboration of a research institute and three small businesses, all operating within the European Union. These companies have developed specialised and complementary expertise in the technical solution and marketing plan.

IRTA - irta.cat

IRTA is a research institute owned by the government of Catalonia. IRTA's purpose is to contribute to the modernisation, competitiveness and sustainable development of the agriculture, food and aquaculture industries, and the supply of healthy and quality foods to consumers to improve social welfare.

NATURALEA - naturalea.eu

Naturalea is a private company that specialises in landscape restoration in Spain, implementing bioengineering techniques in areas that include river restoration, constructed wetlands and environmental restoration.

BURESINNOVA - buresinnova.com

Buresinnova is a private company dedicated to plant architecture and innovation, and the sustainable use of plant species.

Salix - salixrw.com

Salix focuses on landscape bioengineering in the United Kingdom and uses sustainable and ecological solutions to preserve and enhance natural habitats, including constructed wetlands, soil conservation and river areas.

CONTACT

Rafaela Cáceres Reyes

rafaela.caceres@irta.cat

T. +34 934 674 040 extension 1213

www.cleanleach.eu

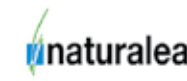


Sustainable system to collect and treat leachate
using natural methods

www.cleanleach.eu



Co-funded by the Eco-innovation
Initiative of the European Union



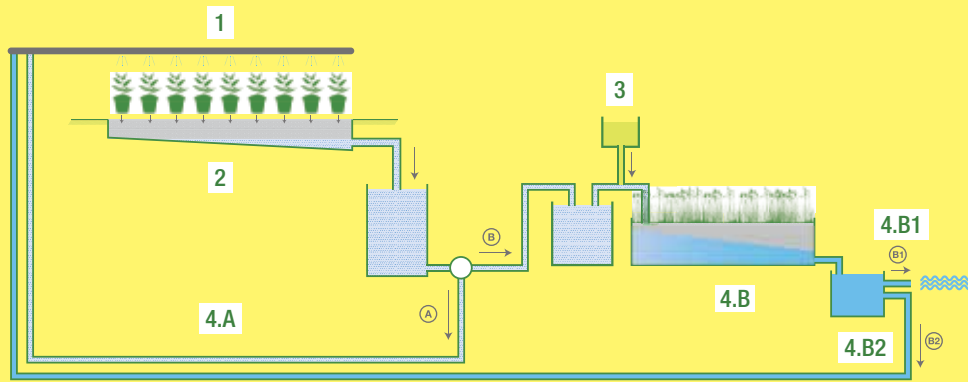
The CLEANLEACH system offers an integral solution to leachate treatment on site. It comprises technology for the recovery and treatment of leachates, based on the combination of a horizontal slow sand filter, constructed under the cultivation zone, as well as wetlands adjacent to it, to reduce nitrates and phosphorous.

CLEANLEACH has been developed by IRTA through the collaboration of Naturalea, Buresinnova and Salix. For three years, the technical system and

environmental benefits of the system have been improved. And new applications have been developed to use the CLEANLEACH system in nurseries, orchards and other growing areas.

The CLEANLEACH Project has been co-funded by the European Union's Eco-innovation initiative (ECO/12/332862), which promotes eco-innovative actions aimed at preventing and reducing environmental impacts and contributing to the optimal use of resources.

FUNCTIONING



1. IRRIGATION: Apply water and fertilisers

2. HORIZONTAL SLOW SAND FILTER: System for filtering and collecting leachates

3. CARBON SOURCE: Addition of easily degradable carbon to facilitate the purification process

4.A. RECIRCULATION: Use of leachate water (water + fertilisers) through the irrigation system

4.B. PURIFICATION: Treatment of water using artificial wetlands. Nitrates turn into N_2 (non-polluting atmospheric gas) and potassium and phosphorus levels are reduced

4.B1. DISPOSAL: Disposal of purified water into the environment, or:

4.B2. RECIRCULATION OF THE TREATED WATER: Addition of purified water to the irrigation system

IMPROVEMENTS OF THE SYSTEM WITHIN THE PROJECT

- Reuse of the wetland biomass as growing medium within the nursery to grow pot plants
- Leachates are drawn up to the constructed wetlands using energy from solar panels
- Granitic gravel used in the constructed wetlands has been replaced with recycled aggregates from construction and demolition debris
- Demolition waste gravel enables the denitrification of the leachates, and also reduces the phosphate content

- Use of beer industry effluents as carbon source
- The slow sand filtration unit exhibits a high attaching capability against pathogenic fungal biomass
- On-line monitoring of the performance of the constructed wetland and app for mobile devices

APPLICATIONS

The CLEANLEACH system has been used in commercial-scale nurseries and a new application has been developed for orchards and other growing areas.

Sala Graupera nursery (Spain)



- Leachates are stored in a tank before being transferred to the constructed wetland. They are drawn up by a pump powered by solar energy, so the system becomes self-sufficient.
- An automatic dosage system for the carbon source supply.

Construction: Naturalea

Salix nursery (UK)



- Sand filter with a geo-composite drainage underneath
- Use of a floating wetland system

Construcción: Salix

Hortcleanleach (Spain)



- A modular system that can be easily adapted to different spaces
- Small subsurface-flow constructed wetland attached to the crop area
- Built with eco-friendly materials, either recycled or easy to recycle

Construction: Buresinnova

Buildcleanleach, Club Patí Vela Restaurant (Barcelona)



- Modular system to build customised green walls and green roofs
- The system enables the use different plant species with different irrigation needs in the same green wall
- Benefits: better isolating and aesthetic value with a sustainable system

Construction: Buresinnova