



LIFE HelpSoil - Helping enhanced soil functions and adaptation to climate change by sustainable conservation agriculture techniques  
LIFE12 ENV/IT/000578



[Project description](#), [Environmental issues](#), [Beneficiaries](#), [Administrative data](#), [Read more](#)

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Project description:

Background

In the river Po plain, the organic carbon stock stored in soils varies from 34-60 tonnes per hectare (t/ha). The potential for further uptake if soils are managed appropriately is estimated to be at least 12.8 t/ha of CO2 equivalent. Furthermore, increasing the organic content of soil improves the physical and chemical qualities of soils, leading to enhanced fertility and better absorption of nutrients. This helps ensure that crops can resist environmental stresses, reduces erosion and soil susceptibility to compaction, improves the ability of soils to act as a filter and buffer against pollutants, and boosts soil biodiversity. Better soil management can therefore contribute significantly to increasing the resilience of terrestrial ecosystems in the face of climate change.

Objectives

The HelpSoil project will test and demonstrate innovative solutions and soil management practices to improve soil quality, and to make agricultural systems more resilient against climate change. The project will cover the whole Po plain (an area of some 46 000 km2) and the Alpine and Apennine foot-hills.

Specific project objectives include:

- Implementing practices to improve the ecological functions of soil - organic carbon sequestration, soil fertility and biodiversity, protection against erosion - in a number of farms, with the goal of increasing agricultural sustainability and competitiveness;
- Integrating conservation practices and innovative techniques in order to increase the efficiency of irrigation; improve the efficiency of fertilisers, in particular livestock manure; and limit the use of pesticides.

The project will also develop indicators of soil ecosystem functions and new techniques to assess the environmental benefits of the practices tested by the project.

Expected results: It is expected that the introduction of farm management practices based on the principles of conservation agriculture will achieve the following results:

- An increase in the organic carbon content of soil of 0.2-0.7 t/ha/yr;
  - Enhancement of the biological fertility of soil;
  - Less soil erosion;
  - A reduction in greenhouse gases and ammonia emissions;
  - More efficient use of irrigation water and fertilisers;
  - Sustainable use of pesticides;
  - Reduction by 60-70% of fossil fuel consumption for soil works;
  - Enhanced adaptation to climate change of agricultural systems;
  - Greater eco-efficiency and competitiveness of agricultural systems; and
  - Greater stability of crop yields, despite increased climate variability.
- In addition, the project will also draft technical guidelines based on its results and adapted to different climatic conditions and cropping systems.

Results

[Top](#)

Environmental issues addressed:

Themes

Industry-Production - Agriculture - Forestry  
Climate change Adaptation - Sectoral adaptation (industry-services)

Keywords

soil erosion, preventive measure, agricultural method

Natura 2000 sites

Not applicable

[Top](#)

Beneficiaries:

Coordinator

Regione Lombardia - DG Agricoltura

Type of organisation

Regional authority

Description

The Lombardy Region General Directorate for Agriculture deals with rural development issues, agricultural research and the general management of the agri-food sector. It promotes innovative agricultural techniques, which can contribute to the reduction of air pollutants and other environmental impacts.

Partners

Veneto Agricoltura, Italy Centro Ricerche Produzioni Animali-CRPA S.p.A., Italy ERSAF, Italy Regione Emilia Romagna-DG Agricoltura, Economia Ittica, Attività Faunistico-Venatorie, Italy Regione Autonoma Friuli Venezia Giulia-Direzione centrale risorse rurali, agroalimentari e forestali, Italy Regione Piemonte-DG Agricoltura, Italy Regione del Veneto-Direzione Agroambiente

[Top](#)

Administrative data:

|                   |   |
|-------------------|---|
| Project reference | LIFE12 ENV/IT/000578  |
| Duration          | 01-JUL-2013 to 30-JUN -2017   |
| Total budget      | 2,941,515.00 €  |
| EU contribution   | 1,308,381.00 €  |
| Project location  | Piemonte(Italia), Valle d'Aosta(Italia), Liguria(Italia), Lombardia(Italia), Trentino-Alto Adige(Italia), Veneto(Italia), Friuli-Venezia Giulia(Italia), Emilia-Romagna(Italia), Toscana(Italia), Umbria(Italia), Marche(Italia), Lazio(Italia), Campania(Italia), Abruzzo(Italia), Molise(Italia), Puglia(Italia), Basilicata(Italia), Calabria(Italia), Sicilia(Italia), Sardegna(Italia) |

[Top](#)

Read more:

Project web site

[Project's website](#)

[Top](#)

[Project description](#), [Environmental issues](#), [Beneficiaries](#), [Administrative data](#), [Read more](#)



ReQpro - A model to reclaim and reuse wastewater for quality crop production

LIFE11 ENV/IT/000156



[Project description](#) [Environmental issues](#) [Beneficiaries](#) [Administrative data](#)  
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#### Project description:

##### Background

Agriculture is the top water-consuming sector in southern European countries, accounting for more than 50% of the total water demand and reaching up to 80% in specific cases, according to the European Environment Agency's report, "The European environment, state and outlook 2010, water resources-quantity and flows". In Italy, agriculture accounts for 60% of total water consumption. In the region of Emilia-Romagna, water consumption for irrigation is 66%. Agriculture's extremely high share of water consumption affects both surface and underground water resources. In the Po river basin, where 40% of Italy's national GDP is generated, this situation has led to both water body deterioration and an imbalance between surface and underground water ecosystems. The reuse of treated wastewater and irrigation system rationalisation are key issues for environmental preservation.

##### Objectives

The 'ReQpro' project will contribute to the protection of water resources through efficient re-use of treated wastewater for irrigation of agricultural land, thus replacing the use of surface water and groundwater resources. This objective will be achieved by developing a model of water reclamation and re-use for irrigation of high quality crops.

The specific objectives of the project are:

- To evaluate the efficiency and the cost of tertiary wastewater treatment, aimed at achieving the standards set out in regulations on wastewater reuse in agriculture;
- To test new irrigation management practices, maximising the amount of irrigation wastewater applied to individual land plots, on an agricultural catchment area cultivated with high quality crops;
- To learn lessons about good practice for wastewater reuse;
- To evaluate the environmental and economic effects of the implementation of the proposed water reuse practice in the Po river basin; and
- To increase farmers' awareness of wastewater reuse options.

Expected results The quantified expected results of the project are:

- Tertiary treatment of approximately half of the flow produced by the Mancasale wastewater treatment plant in Reggio Emilia, in order to produce water suitable for reuse in agriculture;
- Recovery of some 40 000 m<sup>3</sup>/day of irrigation wastewater during the irrigation period;
- Wastewater reuse for the irrigation of an agricultural area of some 2 000 ha;
- A reduction of the discharge into water bodies of nutrient loadings. The amount of nutrients (nitrogen and phosphorus) in treated wastewater that will be applied to agricultural land instead of being discharged to surface water is preliminarily estimated at 40 000 kg/yr of nitrogen and 5 000 kg/yr of phosphorus;
- The development and assessment of an innovative wastewater traceability system, enabling the optimal usage of reclaimed wastewater and the provision of detailed information on reclaimed wastewater volume and quality to farmers; and
- The development of a risk management system to address possible problems.

Results

[Top](#)

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Environmental issues addressed:

Themes

Industry-Production - Agriculture - Forestry  
Water - Water resources protection

Keywords

Agriculture, waste water treatment, water reuse

Natura 2000 sites

Not applicable

[Top](#)

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Beneficiaries:

|                      |   |
|----------------------|---|
| Coordinator          | Centro Ricerche Produzioni Animali - CRPA SpA   |
| Type of organisation | Research institution  |
| Description          | CRPA SpA is a research and consulting company working in the livestock sector and related areas of agro-industry. Its main goal is to carry out research, and to implement and manage services for agricultural producers, the agro-food industry and relevant public bodies, in order to promote technical, economic and social progress in farming. |
| Partners             | IREN Emilia, Italy Consorzio di Bonifica dell'Emilia Centrale, Italy Consorzio di Bonifica di secondo grado per il Canale Emiliano Romagnolo, Italy Autorità di Bacino del Fiume Po, Italy  |

[Top](#)

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Administrative data:

|                   |                             |
|-------------------|-----------------------------|
| Project reference | LIFE11 ENV/IT/000156        |
| Duration          | 01-DEC-2013 to 28-FEB -2017 |
| Total budget      | 698,600.00 €                |
| EU contribution   | 343,148.00 €                |
| Project location  | Emilia-Romagna(Italia)      |

[Top](#)

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Read more:

Project web site [Project's website](#)

[Top](#)

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[Project description](#) [Environmental issues](#) [Beneficiaries](#) [Administrative data](#)  
[Read more](#)

**Water Campus is an innovative center dedicated to innovation transfer to companies operating in agriculture, comprising an advanced design center for the latest technology innovation in irrigation and a demonstration center for excellent technologies for corporate and consortium distribution of irrigation water**



### **RESEARCH AREA IRRIGATION**

15 hectares, 30 experimental fields, an advanced analytical lab, multimedia classroom teaching, all managed by highly qualified staff, supported by the most advanced equipment in the irrigation research, combining the experimental research in the field, the demonstration of results and training.

### **DEMO AREA TECHNOLOGY IRRIGATION**

The ERC, with funding from the Region of Emilia Romagna and the contribution of manufacturers of irrigation devices, launched the informative and communicative project Demonstration Area of irrigation equipment WATER CAMPUS, with the aim of:

- realize an exhibition technical structure of national importance, in which are placed the most important and innovative irrigation equipment for the most common crops in Italy
- conceive, plan and conduct a communication project aimed to technicians, retailers, the public administration and associations of agricultural staff, but, above all, to farmers, to increase irrigated technological culture.

The project began in 1989 with the creation of the Field exhibition of Irrigation equipment at the demonstration farm of the ERC area in the municipality of Budrio, in the province of Bologna.



From March to November, the ERC provides engineers working in the field of irrigation and farmers the opportunity to visit the "demonstration Area of Irrigation equipment". The camp is open to all the indicated dates and guided tour will start at 9.30. You can visit, without warning, the most comprehensive demonstration facility in the field of irrigation region. They will find the dispensers models (drippers in exposure and sprayers) and most common driplines on the market, rainfall lines with relative sprinklers, equipment for pumping, filtering and fertigation, self-propelled latest generation and pivot. For specification of land reclamation is available a special area "Delivery Networks" where are all technologies dedicated to irrigation water management.

To visit the camp please contact:  
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