



Consiglio Nazionale delle Ricerche

Area della Ricerca di Pisa



CNR-Pisa

The biggest research area in Italy



Institutes:

1. Biofisica
2. Biologia e Biotecnologia Agraria
3. Chimica dei composti organo-metallici
4. Fisiologia clinica
5. Geoscienze e georisorse
6. Informatica e Telematica
7. Istituto Nazionale Ottica
8. Linguistica Computazionale
9. Neuroscienze
10. Processi Chimico-Fisici
11. Scienza e Tecnologia dell'Informazione
12. Studio degli Ecosistemi
13. Tecnologie Biomediche

Staff: about 1000 employees

Flora Toscana, Pescia, 5 October 2018



Institute of Ecosystem Study (ISE)



The **Institute of Ecosystem Study-ISE** performs research into the structure and functioning of aquatic and terrestrial ecosystems, focusing in particular on anthropogenic pressure and global change. The ISE knowledge gives the scientific basis for identifying the most appropriate protective and corrective interventions, and provides support for the bodies entrusted with formulating policies for environmental protection and recovery. ISE included 4 units, Verbania (head unit), Pisa, Firenze and Sassari. The 19th of September 2018 ISE was abolished. From 20 September ISE Pisa, Florence and Sassari joint with IBAF (Institute of Agro-Environmental and Forest Biology) to become

IRET Research Institute on Terrestrial Ecosystem

Research group

Grazia Masciandaro
Cristina Macci
Serena Doni
Eleonora Peruzzi

Technician: Fernando Di Giovanni, Manuele Scatena

Financer: Alessandra Bartolini

Students: Thesis, Stage, PhD

Collaborations

Nationals:

- University of Pisa, Viterbo, Roma, Napoli, Firenze, Padova, Milano, Cagliari
- Acque S.p.A. (Pisa)
- San Giuliano Terme Municipality (Pisa)

Internationals:

- CSIC. Consejo Superior de Investigaciones Cientificas of Murcia, Madrid, Granada, Salamanca (Spain), University of Santiago de Compostela (Spain)
- Warwick University (United Kingdom)
- China University of Geoscience (China)
- Università BIOTERRA Bucarest (Romania)
- Colpos-Colegio de post graduados of Veracruz, Mexico



Main research topics



✓ Bioremediation and recycling of dredged sediments

- 2018 -2021 European project AGRISED LIFE17 ENV/IT/269 Use of dredged sediments for creating innovative growing media and technosols for plant nursery and rehabilitation
- 2017-2019 National project financed by Fondazione Cassa di Risparmio Pistoia e Pescia “Posidonia oceanica e sedimenti per la produzione di substrati per la vivaistica”
- 2015-2018 European project HORTISED LIFE13 ENV/IT/113 “Demonstration of the suitability of dredged remediated sediments for safe and sustainable horticulture production”
- 2014-2016 European project CLEANSED: LIFE12 ENV/IT/000652 “Innovative integrated methodology for the use of decontaminated river sediments in plant nursing and road building”
- 2009-2012 European project AGRIPORT ECO/08/239065/SI2.532262 “Agricultural Reuse of Polluted Dredged Sediments”



Main research topics



✓ Soil quality and functionality and ecological techniques to recover stressed soil

- 2018-2022 European project ZEOWINE LIFE17 ENV/IT/427 ZEOLite and WINERY waste as innovative product for wine production
- 2015-2018 European project ERASMUS+ 2015-1-ES01-KA203-016214 “Land degradation and rehabilitation in Mediterranean Environments”
- 2013-2015 European project BIOREM LIFE11 ENV/IT/000113 “Innovative System for the Biochemical Restoration and Monitoring of Degraded Soils
- 2006-2012 National project financed by San Giuliano Terme Municipality “Ecological approach to remediate polluted soil located in Madonna dell’Acqua (San Giuliano Terme municipality) through natural technologies
- 2005-2008 European project ALMOND PRO-SOIL LIFE05/ENV “Soil protection in Mediterranean areas through cultivation of new varieties of almond tree”



Main research topics



✓ Valorization of organic residue (organic fraction of waste residues, Olive residues, biological sewage sludges) through biological techniques

▪ 2004-2012 National project financed by Acque S.p.A. (Pisa) “Phytomineralization of sewage sludge”

▪ 2000-2002 National project financed by San Giuliano Terme Municipality “Valorization of olive residues through vermicomposting process (*Eisenia foetida*)”

✓ Bioindicators to evaluate soil degradation and desertification

▪ 2004-2006 European Project INDEX. STREP n° 505450 “Indicators and Thresholds for Desertification, Soil Quality, and Remediation”



Biological and biochemical parameters are useful indicator to monitor rapid change occurred in soil or other matrix such as sediment during a recovery or decontamination processes. They are considered to be the most sensitive indicators even of slight modifications occurring in soil because they are dependent on microbial biomass activity and are strictly related to active nutrient pools

SUBSED LIFE17 ENV/IT/000347



"Sustainable substrates for agriculture from dredged remediated marine sediments: from ports to pots"



Beneficiaries:

Coordinator - **Flora**: Flora Toscana Soc. Agr. Coop

Partners

- **CNR**: the National Research Council, Pisa, Italy
- **CREA**: Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria
- **CarbonSink**: CARBONSINKGROUP S.R.L.
- **UMH**: Miguel Hernandez University of Elche, Alicante, Spain
- **CALIPLANT**: Viveros Caliplant S.L., Murcia, Spain

Total budget	1,745,524 €	CNR contribution	178,452€
EU contribution	1046,731 €	EU contribution CNR	107,071€

Start date: 01/10/2018

Flora Toscana, Pescia, 5 October 2018

End date: 30/09/2021



SUBSED LIFE17 ENV/IT/000347



CNR is involved in:



B. Implementation actions

B1. Phytoremediated Sediment treated via landfarming process (responsible).

CNR involvement: Sediment landfarming and Physical, chemical and biological **characterization** of sediments **01/10/2018-31/03/2019**

B2. Demonstration of the use of remediated sediments as a substrate for nursery production.

CNR involvement: substrate preparation and properties of growing substrates **01/04/2019-31/03/2021**

B5. Training courses, workshops and guidelines for project replicability and transferability...all partners **01/10/2020-30/09/2021**

B6. SUBSED Business Plan...all partners **01/01/2021-30/09/2021**



SUBSED LIFE17 ENV/IT/000347



CNR is involved in:



C. Monitoring of the impact of the project actions

C1. Monitoring and validation of treated sediments (responsible).

CNR involvement: Physical, chemical and biological characterization of sediments.

01/01/2019-30/06/2019

C2. Monitoring and validation of the use of remediated sediments as a substrate for plant nursing and cultivation: non food crops production.

CNR involvement: Physical, chemical and biological characterization of growing media. **1/07/2019-30/06/2021**

C3. Monitoring and validation of the use of remediated sediments as a substrate for nursing and cultivation: food crops production.

CNR involvement: Physical, chemical and biological characterization of growing media. **01/07/2019-30/09/21**

C.4 Monitoring of socio-economic impact of the project and LCA

C.5 Performance indicators monitoring

all partners **01/10/2020-30/09/2021**



SUBSED LIFE17 ENV/IT/000347
CNR is involved in:



D. Public awareness and dissemination of results

D.1 Project dissemination plan: web-site, material, articles, Layman's report and video
all partners **01/10/2018-30/09/2021**

E. Project management and monitoring of the project progress

E.3 SUBSED After-LIFE plan
all partners **01/10/2018-30/09/2021**



Thanks for your attention

