



SUBSED – Project LIFE17 ENV/IT/000347

**“Sustainable substrates for agriculture from dredged remediated
marine sediments: from ports to pots”**

SUBSED Dissemination Material

at Mid-Term Period

Action D.1



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1. Introduction

This report contains all SUBSED dissemination activities concerning the development and distribution of dissemination material from the start of the project (01/10/2018) until the mid-term period of the project (31/03/2020).

In particular:

- Development of project web site and social pages: Flora Toscana developed and registered the website www.lifesubsed.com and implemented the SUBSED FB page. Recently, Flora Toscana has also created a SUBSED Twitter profile;
- Notice board: Flora Toscana created 12 notice boards displayed in the public places of each beneficiary;
- Dissemination material: all the SUBSED beneficiaries produced the project logo, 3000 brochures, 3 roll-up, 2 banners, 1 poster and 2100 various items as project gadgets;
- Publication, articles and press releases: 1 technical publication and 4 articles.

2. SUBSED website and social pages

2.1 Website www.lifesubsed.com

The www.lifesubsed.com website has been published in October 2018. The first following weeks have been necessary for Google indexing and DNS propagation.

Flora Toscana is responsible for the creation and maintenance of this project website and, thanks to the work done collaborating with other beneficiaries, works for its regular updating.

The structure of the site.

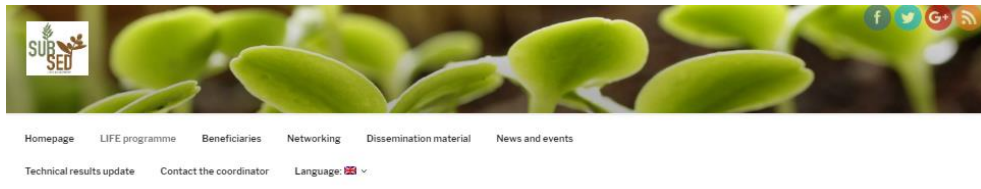
The lifesubsed.com website has been created with a simple and functional interface. The theme used is fully scalable, and the contents can be displayed correctly on both PC and tablet or smartphone. The published contents have been written in English, Italian and Spanish, and a language choice menu is available.

Through the principal menu in the top of each page, links to the 8 main sections of the website can be reached. Each section contains links to events, articles, downloadable material or external pages.

1. **HOME PAGE** → A summary of the main contents of the project are here available. The LIFE logo has been placed in the foreground, and by clicking on this the user is redirected to the official LIFE programme website. The sections *Objectives*, *Expected results*, *News* and *Contact* can be reached scrolling down (the parallax effect alternates texts with photos of the species that will be cultivated during the planned trials).



2. **LIFE PROGRAMME** → This page provides main information on the LIFE programme and on its objectives, providing the link to the official website.



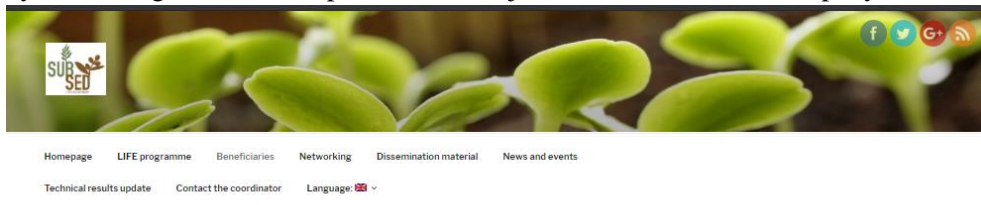
LIFE PROGRAMME

The European Union provides funding for environmental and nature conservation projects through its LIFE Programme. The Programme was set up in 1992 to fund projects in the EU - and in some candidate and neighbouring countries.

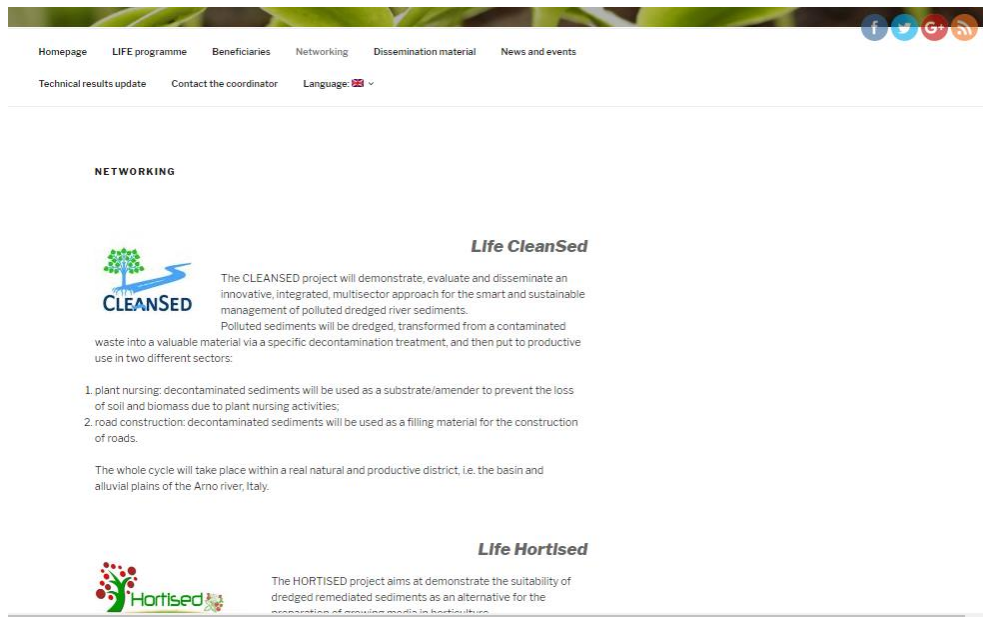
The fourth phase of the programme, known as LIFE+, covers 2007-2013, and has a budget of €2 143 million. At least 50 % of this must be spent on nature and biodiversity projects. The remaining money is spent on environmental policy projects and environmental awareness-raising.

The Nature and Biodiversity projects aim to improve the conservation of endangered species and habitats. The goal is to help implement the Birds and Habitats Directives and the Natura 2000 network of protected areas. The projects are pilot schemes that work towards the EU's goal of halting the loss of biodiversity.

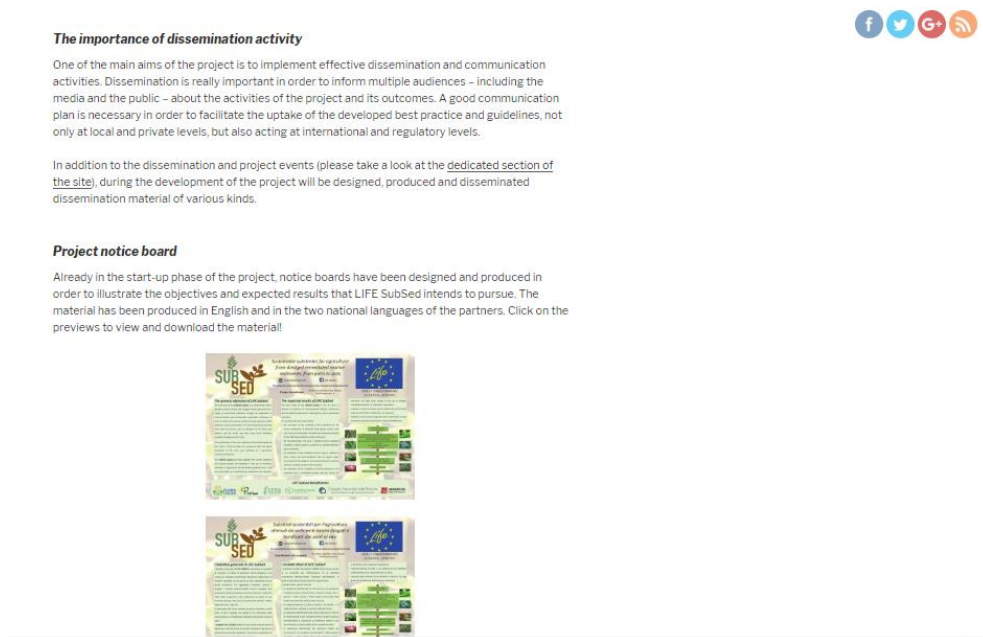
3. **THE BENEFICIARIES** → This section the beneficiaries involved in the SUBSED project are listed. By clicking on the logo of each one, the user is redirected to a page dedicated to the individual beneficiary containing a brief description of the subject and the link to its company website.



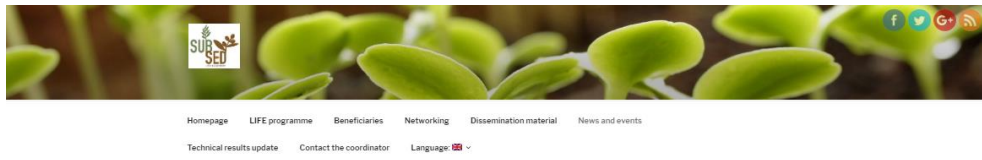
4. **NETWORKING** → This page shows the projects with which SUBSED has started collaboration and information exchange activities. For each project a brief description of its main objectives and the link to its website are provided.



5. **DISSEMINATION MATERIAL** → This section contains the information materials produced during the project (their pdf versions are freely downloadable) and photos of the gadgets produced and distributed.



6. **NEWS AND EVENTS** → This section contains the posts relating to dissemination events, project events and articles /press releases. By clicking on each link the user is redirected to the specific post, containing specific photos and textual description of the activity carried out.



NEWS AND EVENTS

Dissemination events

- [LIFE AgriSed at the Irish Agriculture and Food Development Authority](#) - 1-8 December 2019
- [LIFE Subsed at BRIGHT 2019 in Pisa \(Italy\)](#) - 27 September 2019
- [LIFE Subsed at the RemTech fair in Ferrara \(Italy\)](#) - 18-20 September 2019
- [LIFE Subsed at the CNR-IRET Institute Conference at the Rome Headquarters](#) - 9-10 April 2019
- [LIFE Subsed at the course "Water management across agro-ecosystems" in Pisa](#) - 26-29 March 2019
- [LIFE Subsed at the 3rd National Congress "Fruta de Hueso" in Murcia](#) - 6 March 2019
- [LIFE Subsed at the seminar "Fitotecnologie per la Gestione e la bonifica di siti contaminati: esempi di buone pratiche" held in Pesaro \(Italy\)](#) - 04 March 2019

7. **TECHNICAL RESULTS UPDATE** → This section contains the periodic reports sent to the monitoring team and the links to the developed deliverables. This section will also contain links to scientific publications relating to the SUBSED project and to posts concerning the “updates from the fields”. All pdf contents available in this section are downloadable.



TECHNICAL RESULTS UPDATE

Edit

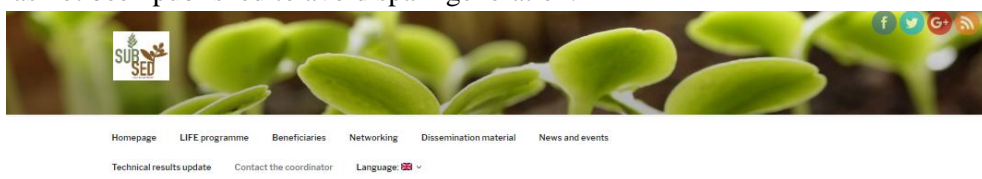
Monthly reports

- [Monthly report of November 2018](#)
- [Monthly report of December 2018](#)
- [Monthly report of January 2019](#)
- [Quarterly report of April 2019 – June 2019](#)
- [Quarterly report of July 2019 – September 2019](#)
- [Quarterly report of October 2019 – December 2019](#)

Deliverables

- Deliverable Action A.1 – [Review of legislation on dredged sediment management](#)
- Deliverable Action D.1 – [Communication Plan](#)

8. **CONTACT THE COORDINATOR** → In this section there is a contact form that allows users to communicate with SUBSED technical responsible, Maria Castellani from Flora Toscana. Her email address has not been published to avoid spam generation.



CONTACT THE COORDINATOR

Your name (required)

Your email (required)

Subject

Your message

The website contains also links to the social pages of the LIFE SUBSED project and buttons for immediate sharing of website contents on social media.

Website updating

The coordinator periodically collects updates from the beneficiaries as subject responsible for the website updating. *News and events*, *Technical results update*, *Dissemination material* and *Networking* pages are regularly updated with new visual and textual contents and with links to new informative materials and posts (the other pages can generally be considered “static”).

The **posts** published until 12/03/2020 are 25, all written in the 3 project languages. The **media contents** (figures, photos, documents, etc.) uploaded on the site until 12/03/2020 are 260.

Website insights

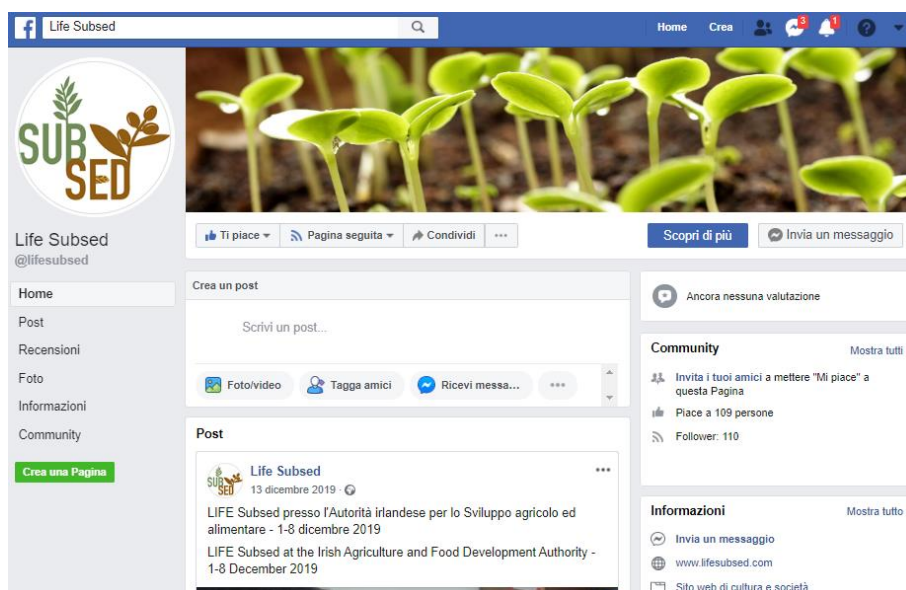
Site performance is monitored both through Google Analytics and through CMS plugins. On the homepage there is also a counter, which measures the number of times that website pages have been loaded. At 12/03/2020 the counter reached 77,324.

The associated Google Analytics profile reports for the period from 1/10/2018 to 12/03/2020 the following main indicators:

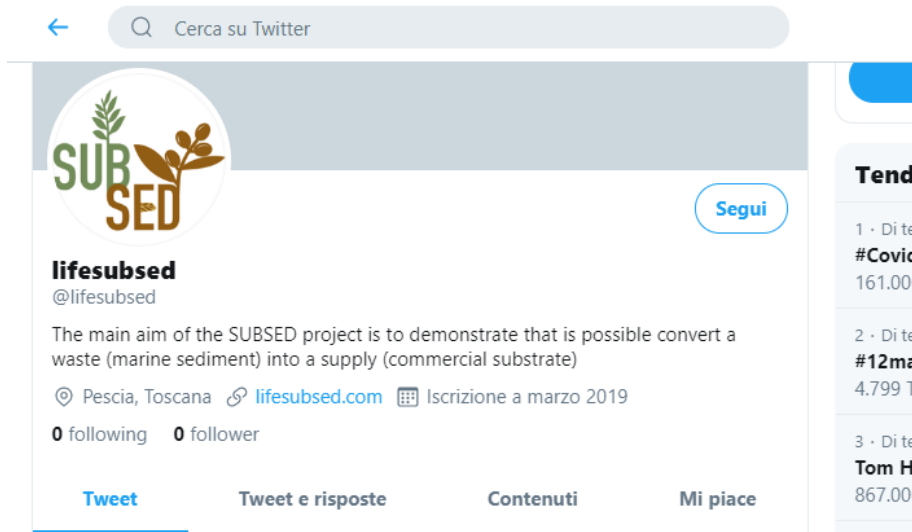
- n. of users → 986;
- n. of new users → 993;
- n. of sessions → 1,333;
- 11.4 % new visitor vs 88.6 % returning visitor

2.2 LIFE SUBSED social profiles

The LIFE SUBSED Facebook page has been created during the first month of the project. Periodically, graphic and textual content and links to the posts published on lifesubsed.com are posted on the page. Currently the page has 109 likes.



The LIFE SUBSED Twitter profile is planned to be launched as soon as the main activities will start. A static profile has been already created.



3. SUBSED Notice Boards

During the mid-term period of the SUBSED project, Flora Toscana developed the project Notice Boards and produced 12 copies of this:

- 6 pieces for the [English version](#);
- 1 piece for the [Spanish version](#);
- 5 pieces for the [Italian version](#).

The Notice Boards have been sent to all partners, that display them in visible spots and public accessible places of their premises.

3.1 Flora Toscana Notice Board



Notice board displayed at the entrance of the Flora Toscana premise in Via Caravaggio, 21



Notice board displayed at the entrance of the Flora Toscana premise in Via Montecarlo, 81

3.2 Cali Plant Notice Board



Notice board displayed in the corridor of the CaliPlant premise

3.3 CREA Notice Board



Notice board displayed at the entrance of the CREA premise



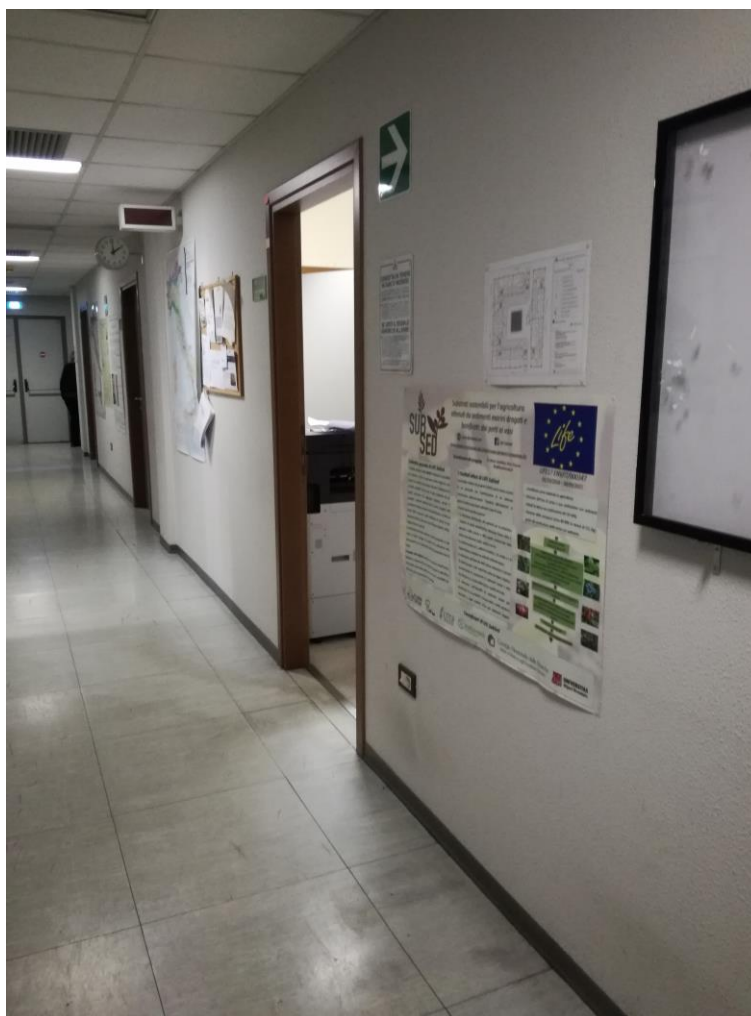
Notice board displayed in the corridor of the CREA premise

3.4 Carbonsink Notice Board



Notice board displayed in the corridor of the Carbonsink premise

3.5 CNR Notice Board



Notice board displayed in the corridor of the CNR premise

3.6 UMH Notice Board



Notice board displayed at the entrance of the UMH premise

4. SUBSED Dissemination Material

In the following paragraphs the dissemination material produced during the first 18 month of SUBSED is presented.

4.1 Brochures

The production of informative brochures is planned in the project communication plan. This general brochure, which will be joined by others during the project, illustrates the objectives and expected results of LIFE SUBSED. The material has been produced in English and in the two national languages of the partners.

English version ([here](#) downloadable) → 1000 copies printed and distributed

LIFE SUBSED flow chart

- Treated sediments (Port of Leghorn-IT)
- Physical and chemical analysis of substrates
 - Monitoring rooting and vegetative growth of plants
 - Monitoring flowering and fruiting
 - Morphological and chemical characterisation of plants and fruit
 - Sensorial evaluation of foods
 - Life Cycle Analysis
- Comparative evaluation of vegetative and productive parameters
- Legal issues on sediments re-use
 - Commercial issues for marketing
 - Treated sediment preparation and packaging
- Pre-commercial trials
- Dissemination - Nurseries and Fruitgrowers

Beneficiaries

- FLORA TOSCANA
- Caliplant
- scree (Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria)
- carbonsink (the sustainable change)
- Consiglio Nazionale delle Ricerche (Istituto di Ricerca sugli Ecosistemi Terrestri)
- UNIVERSITAS Miguel Hernández

Project coordinator
Dr. Maria Castellani, Flora Toscana
life@floratoscana.it

This project is co-financed by the European Union through the LIFE programme

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

www.lifesubsed.com
Life Subsed

LIFE17 ENV/IT/000347
01/10/2018 - 30/09/2021

reasons for hindrance
in the use of innovative substrates in agriculture and will produce guidelines for a safe and sustainable use of sediments as constituents of a substrate.

The general objective of LIFE SubSed
The main aim of the SUBSED project is to demonstrate that it is possible to convert a waste (the dredged marine sediment) into a supply (a commercial substrate) through the application of environmentally and economically sustainable techniques. In order to achieve this purpose, sediment-based substrates will be applied to nursery production of ornamentals (laurel) and fruit trees (olive and citrus), and to cultivation of non-food crops (protea, calla lily, laurel) and food crops (basil, blueberry, woodland strawberry and citrus). The performance of the new substrate will be demonstrated at farm scale in Italy and Spain by comparison with the typical production of the same crop cultivated on a peat-based commercial substrate. The SUBSED project will also highlight the current legislative and cultural

The expected results of LIFE SubSed
The main result of the SUBSED project is the set up of a protocol to optimize an 'environmentally friendly' commercial sediment-based substrate for replacing the current peat-based substrates. The specific technical results will be:

- the evaluation of the suitability of the sediments for the nursery production of food/non food species (laurel, olive and citrus) and evaluation of growth and commercial quality of non food crops (calla lily, protea and laurel);
- the characterisation of 1 basil, 2 blueberry and 1 woodland strawberry cultivars grown in container on treated sediment-based substrates;
- the evaluation of the suitability of food crops in relation to heavy metals and other pollutants also of organic origin, improving the knowledge on the treated sediments and their influence on plant growth and fruit quality;
- the evaluation of the suitability of treated sediments to be converted into a marketable product and also face the normative and legal issues related to the use of dredged remediated sediment as substrate in agriculture;
- reduction of the use of peat and its substitution with treated sediments (10-20% of substitution are expected);
- reduction of CO₂ emission (kg) due to the substitution of peat by treated sediments (expected to be about 80-90% less).

Italian version ([here](#) downloadable) → 1000 copies printed and distributed

Diagramma di flusso di SUBSED

I Beneficiari

FLORA TOSCANA
PaliPlant
crea
Carbonsink
Consiglio Nazionale delle Ricerche
UNIVERSITAS Miguel Hernández

LIFE17 ENV/IT/000347
01/10/2018 - 30/09/2021

SUB SED

Substrati sostenibili per l'agricoltura ottenuti da sedimenti marini dragati e bonificati: dai porti ai vasi

www.lifesubsed.com
Life Subsed

Coordinatore del progetto
Dr. Maria Castellani, Flora Toscana
life@floratoscana.it

Questo progetto è co-finanziato dalla Unione Europea attraverso il programma LIFE

L'obiettivo generale di LIFE SubSed

L'obiettivo principale di LIFE SUBSED è dimostrare la possibilità di convertire un rifiuto (il sedimento marino dragato) in una risorsa (un substrato commerciale) attraverso l'applicazione di tecniche sostenibili sia dal punto di vista ambientale che da quello economico. Per raggiungere l'obiettivo, durante il progetto i substrati sediment-based saranno impiegati nella produzione vivaistica di piante ornamentali (lauro) e di alberi da frutto (olivo e agrumi) e nella coltivazione di colture sia non alimentari (protea, calla, lauro) che alimentari (basilico, mirtillo, fragola di bosco e agrumi). Le prestazioni del nuovo substrato saranno comparate su scala reale, in Italia e Spagna, con quelle di una coltivazione delle stesse piante su un tradizionale substrato commerciale a base di torba.

I risultati attesi di LIFE SubSed

Il principale risultato del progetto SUBSED sarà la messa a punto di un protocollo per l'ottimizzazione di un substrato commerciale sediment-based "rispettoso dell'ambiente", in grado di sostituire gli attuali substrati a base di torba.

I risultati tecnici specifici saranno:

- la valutazione dell'idoneità dei sedimenti per la produzione vivaistica di specie alimentari/non alimentari (lauro, olivo e agrumi) e della crescita e della qualità commerciale delle colture non alimentari (calla, protea e lauro);
- la caratterizzazione di 1 cultivar di basilico, 2 di substrati sediment-based;
- la valutazione dell'idoneità delle colture alimentari in termini di metalli pesanti e altri inquinanti anche di origine organica, incrementando la conoscenza sui sedimenti trattati e sulla loro influenza su crescita delle piante e qualità dei frutti;
- la valutazione dell'idoneità dei sedimenti trattati alla conversione in un prodotto commerciabile e delle questioni normative e legali relative all'uso del sedimento dragato e bonificato come substrato in agricoltura;
- riduzione dell'uso di torba e sua sostituzione con sedimenti trattati (è attesa una sostituzione del 10-20%);
- riduzione delle emissioni (circa 80-90% in meno) di CO₂ (kg) grazie alla sostituzione della torba con sedimenti.

Spanish version ([here](#) downloadable) → 1000 copies printed and distributed

Diagrama de flujo de LIFE SubSed

Sedimentos tratados (Puerto de Livorno - IT)

Análisis físico y químico de sustratos
Seguimiento del enraizamiento y crecimiento vegetativo de las plantas
Seguimiento de la floración y fructificación
Caracterización morfológica y química de plantas y frutos
Evaluación sensorial de alimentos
Análisis del ciclo de vida

Evaluación comparativa de parámetros vegetativos y productivos

Cuestiones legales sobre la reutilización de sedimentos
Problemas comerciales para la comercialización
Preparación y envasado de sedimentos tratados

Pruebas pre-comerciales

Difusión - Viveros y Fruticultores

Los beneficiarios

FLORA TOSCANA

Caliplant

crea
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

carbonsink
the sustainable change

Consiglio Nazionale delle Ricerche
Istituto di Ricerca sugli Ecosistemi Terrestri

UNIVERSITAS Miguel Hernández

Coordinador de proyecto
Dr. Maria Castellani, Flora Toscana
life@floratoscana.it

Este proyecto está cofinanciado por el Programa LIFE de la Unión Europea

LIFE17 ENV/IT/000347
01/10/2018 - 30/09/2021

SUB SED

Sustratos sustentables para la agricultura de sedimentos marinos remediados y dragados: desde puertos hasta macetas.

www.lifesubsed.com

Life Subsed

Objetivos de LIFE SubSed

El objetivo principal del proyecto SUBSED es demostrar que es posible convertir un desecho (sedimento marino dragado) en un suministro (sustrato comercial) a través de la aplicación de técnicas ambiental y económicamente sostenibles. Para lograr el propósito, los sustratos basados en sedimentos se aplicarán a la producción de plantas ornamentales (laurel) y árboles frutales (olivos y cítricos), y al cultivo de cultivos no alimentarios (protea, cala, laurel) y cultivos alimentarios (albahaca, arándano, fresas y cítricos).

El rendimiento del nuevo sustrato se demostrará a escala de granja en **Italia y España** en comparación con la producción típica del mismo cultivo cultivado en un sustrato comercial a base de turba.

El rendimiento del nuevo sustrato se demostrará a escala de granja en Italia y España en comparación con la producción

típica del mismo cultivo cultivado en un sustrato comercial a base de turba. El proyecto SUBSED también resaltarán las **razones legislativas y culturales** actuales para obstaculizar el uso de sustratos innovadores en la agricultura y producirá pautas para un uso seguro y sostenible de los sedimentos como constituyentes de un sustrato.

Resultados previstos de LIFE SubSed

El principal resultado del proyecto SUBSED es la configuración de un **protocolo** para optimizar un sustrato comercial basado en sedimentos "respetuoso con el medio ambiente" para reemplazar los sustratos actuales a base de turba. Los resultados técnicos específicos serán:

- la evaluación de la idoneidad de los sedimentos para la producción de viveros de especies alimentarias/no alimentarias (laurel, oliva y cítricos) y la evaluación del crecimiento y la calidad comercial de los cultivos no alimentarios (cala, protea y laurel);
- la caracterización de 1 cultivo de albahaca, 2 de arándanos y 1 de fresa de bosque cultivados en contenedores sobre sustratos a base de sedimentos tratados;
- la evaluación de la idoneidad de los cultivos alimentarios en relación con los metales pesados y otros contaminantes también de origen orgánico, mejorando el conocimiento sobre los sedimentos tratados y su influencia en el crecimiento de las plantas y la calidad de la fruta;
- la evaluación de la idoneidad de los sedimentos tratados para convertirlos en un producto comercializable y también enfrentar los problemas normativos y legales relacionados con el uso de sedimentos remediados dragados como sustrato;
- reducción del uso de turba y su sustitución con sedimentos tratados (se espera un 10-20% de sustitución);
- reducción de la emisión de CO2 (kg) debido a la sustitución de turba por sedimentos tratados (se espera que sea aproximadamente 80-90% menos).

4.2 Roll ups

During the start-up phase of the project, 3 version of roll-ups in English, Spanish and Italian have been produced in order to illustrate the SUBSED objectives and expected results.

English version ([here](#) downloadable) → 1 copy produced

This project is co-financed by the European Union through the LIFE programme

www.lifesubsed.com  Life Subsed



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



LIFE17 ENV/IT/000347
01/10/2018 - 30/09/2021

Project Coordinator Dr. Maria Castellani, Flora Toscana
life@floratoscana.it

LIFE SubSed Objectives

The main aim of the SUBSED project is to demonstrate that it is possible to convert a waste (the dredged marine sediment) into a supply (a commercial substrate) through the application of environmentally and economically sustainable techniques. In order to achieve the purpose sediment-based substrates will be applied to nursery production of ornamentals (laurel) and fruit trees (olive and citrus), and to cultivation of non food crops (protea, calla lily, laurel) and food crops (basil, blueberry, woodland strawberry and citrus). The performance of the new substrate will be demonstrated at farm scale in Italy and Spain by comparison with the typical production of the same crop cultivated on a peat-based commercial substrate. The SUBSED project will also highlight the current legislative and cultural reasons for hindrance in the use of innovative substrates in agriculture and will produce guidelines for a safe and sustainable use of sediments as constituents of a substrate.

LIFE SubSed Expected Results

The main result of the SUBSED project is the set up of a protocol to optimize an 'environmental friendly' commercial sediment-based substrate for replacing the current peat-based substrates. The specific technical results will be:

- the evaluation of the suitability of the sediments for the nursery production of food/non food species (laurel, olive and citrus) and evaluation of growth and commercial quality of non food crops (calla lily, protea and laurel);
- the characterisation of 1 basil, 2 blueberry and 1 woodland strawberry cultivars grown in container on treated sediment-based substrates;
- the evaluation of the suitability of food crops in relation to heavy metals and other pollutants also of organic origin, improving the knowledge on the treated sediments and their influence on plant growth and fruit quality;
- the evaluation of the suitability of treated sediments to be converted into a marketable product and also face the normative and legal issues related to the use of dredged remediated sediment as substrate in agriculture;
- reduction of CO₂ emission (kg) due to the substitution of peat by treated sediments (10-20% of substitution are expected; reduction of CO₂ emission (kg) due to the substitution of peat by treated sediments (expected to be about 80-90% less).

Beneficiaries



Italian version ([here](#) downloadable) → 1 copy produced

Questo progetto è co-finanziato dalla Unione Europea attraverso il programma LIFE



www.lifesubsed.com



Life Subsed

SUB SED

Substrati sostenibili per l'agricoltura
ottenuti da sedimenti marini dragati e
bonificati: dai porti ai vasi



LIFE17 ENV/IT/000347
01/10/2018 - 30/09/2021

Coordinatore del progetto

Dr. Maria Castellani, Flora Toscana
life@floratoscana.it

Gli obiettivi di LIFE SubSed

L'obiettivo principale di LIFE SUBSED è dimostrare la possibilità di convertire un rifiuto (il sedimento marino dragato) in una risorsa (un substrato commerciale) attraverso l'applicazione di tecniche sostenibili sia dal punto di vista ambientale che da quello economico. Per raggiungere l'obiettivo, durante il progetto i substrati sediment-based saranno impiegati nella produzione vivaistica di piante ornamentali (lauro) e di alberi da frutto (olivo e agrumi) e nella coltivazione di colture sia non alimentari (protea, calla, lauro) che alimentari (basilico, mirtillo, fragola di bosco e agrumi).

Le prestazioni del nuovo substrato saranno comparate su scala reale, in Italia e Spagna, con quelle di una coltivazione delle stesse piante su un tradizionale substrato commerciale a base di torba.

Il progetto LIFE SUBSED metterà in luce anche le attuali barriere legislative e culturali all'uso di substrati innovativi in agricoltura, producendo anche linee guida per l'uso sicuro e sostenibile dei sedimenti come componente di un substrato.

I risultati attesi di LIFE SubSed

Il principale risultato del progetto SUBSED sarà la messa a punto di un protocollo per l'ottimizzazione di un substrato commerciale sediment-based "rispettoso dell'ambiente", in grado di sostituire gli attuali substrati a base di torba.

I risultati tecnici specifici saranno:

- la valutazione dell'idoneità dei sedimenti per la produzione vivaistica di specie alimentari/non alimentari (lauro, olivo e agrumi) e della crescita e della qualità commerciale delle colture non alimentari (calla, protea e lauro);
- la caratterizzazione di 1 cultivar di basilico, 2 di mirtillo e 1 di fragola di bosco coltivate su substrati sediment-based;
- la valutazione dell'idoneità delle colture alimentari in termini di metalli pesanti e altri inquinanti anche di origine organica, incrementando la conoscenza sui sedimenti trattati e sulla loro influenza su crescita delle piante e qualità dei frutti;
- la valutazione dell'idoneità dei sedimenti trattati alla conversione in un prodotto commerciabile e delle questioni normative e legali relative all'uso del sedimento dragato e bonificato come substrato in agricoltura;
- riduzione dell'uso di torba e sua sostituzione con sedimenti trattati (è attesa una sostituzione del 10-20%);
- riduzione delle emissioni (circa 80-90% in meno) di CO₂ (kg) grazie alla sostituzione della torba con sedimenti.

I Beneficiari



Spanish version ([here](#) downloadable) → 1 copy produced

Este proyecto está cofinanciado por el Programa LIFE de la Unión Europea



www.lifesubsed.com



Life Subsed

SUB SED

Sustratos sustentables para la agricultura de sedimentos marinos remediados y dragados: desde puertos hasta macetas



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01/10/2018 - 30/09/2021

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life@floratoscana.it

Objetivos de LIFE SubSed

El objetivo principal del proyecto SUBSED es demostrar que es posible convertir un desecho (sedimento marino dragado) en un suministro (sustrato comercial) a través de la aplicación de técnicas ambiental y económicamente sostenibles. Para lograr el propósito, los sustratos basados en sedimentos se aplicarán a la producción de plantas ornamentales (laurel) y árboles frutales (olivos y cítricos), y al cultivo de cultivos no alimentarios (protea, cala, laurel) y cultivos alimentarios (albahaca, arándano, fresas y cítricos). El rendimiento del nuevo sustrato se demostrará a escala de granja en Italia y España en comparación con la producción típica del mismo cultivo cultivado en un sustrato comercial a base de turba.

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El proyecto SUBSED también resaltará las razones legislativas y culturales actuales para obstaculizar el uso de sustratos innovadores en la agricultura y producirá pautas para un uso seguro y sostenible de los sedimentos como constituyentes de un sustrato.

Resultados previstos de LIFE SubSed

El principal resultado del proyecto SUBSED es la configuración de un protocolo para optimizar un sustrato comercial basado en sedimentos "respetuoso con el medio ambiente" para reemplazar los sustratos actuales a base de turba. Los resultados técnicos específicos serán:

- la evaluación de la idoneidad de los sedimentos para la producción de viveros de especies alimentarias / no alimentarias (laurel, oliva y cítricos) y la evaluación del crecimiento y la calidad comercial de los cultivos no alimentarios (cala, protea y laurel)
- la caracterización de 1 cultivo de albahaca, 2 de arándanos y 1 de fresa de bosque cultivados en contenedores sobre sustratos a base de sedimentos tratados
- la evaluación de la idoneidad de los cultivos alimentarios en relación con los metales pesados y otros contaminantes también de origen orgánico, mejorando el conocimiento sobre los sedimentos tratados y su influencia en el crecimiento de las plantas y la calidad de la fruta
- la evaluación de la idoneidad de los sedimentos tratados para convertirlos en un producto comercializable y también enfrentar los problemas normativos y legales relacionados con el uso de sedimentos remediados dragados como sustrato en la agricultura
- reducción del uso de turba y su sustitución con sedimentos tratados (se espera un 10-20% de sustitución)
- reducción de la emisión de CO2 (kg) debido a la sustitución de turba por sedimentos tratados (se espera que sea aproximadamente 80-90% menos).

Beneficiarios



4.3 Banners

During the mid-term period, a SUBSED banner ([here](#) downloadable) to be displayed during fairs and events has been designed and produced. 2 copies of this have been produced.



The banner design features a large graphic of oranges in a white bowl on the right side. The central logo consists of the word "SUBSED" in green and brown, with a stylized plant growing from the letters. Text on the banner includes the LIFE logo, project ID "LIFE17 ENV/IT/000347", dates "01/10/2018 - 30/09/2021", and the title "Sustainable substrates for agriculture from dredged remediated marine sediments: from ports to pots". It also lists the project coordinator, website, and various partner logos.

Project Coordinator Dr. Maria Castellani, Flora Toscana
life@floratoscana.it

Beneficiaries FLORA TOSCANA, CalliPlant, creca, carbonsink, Consiglio Nazionale delle Ricerche, UNIVERSITAS Miguel Hernández

www.lifesubsed.com Life Subsed



4.4 Posters

During the first 18 months of project, the beneficiaries produced the following poster that involve LIFE SUBSED.

The poster is titled "Valorizzazione di matrici ambientali e recupero di nutrienti da materiali di scarto nell'ottica dell'economia circolare" and is presented by the Consiglio Nazionale delle Ricerche, Istituto di Ricerca sugli Ecosistemi Terrestri, Sede di Pisa. The research group includes Grazia Masciandaro, Cristina Macci, Serena Dani, Eleonora Peruzzi, and Fernando Di Giovanni.

The poster highlights the goal of improving the management of environmental waste matrices and making economic activities more efficient and less impactful for the environment. It features a central diagram with "ECONOMIA CIRCOLARE" at the center, surrounded by four categories of waste: "SEDIMENTI DI DRAGAGGIO", "RESIDUI DI POSIDONIA OCEANICA", "SCARTI AGRO-INDUSTRIALI", and "FANGHI DI DEPURAZIONE".

Key projects featured include:

- Progetto Europeo HORTISED LIFE14 (ENVIT000113):** "Demonstration of the suitability of dredged remediated sediments for safe and sustainable horticulture production"
- Progetto Europeo CLEANSED LIFE12 (ENVIT7652):** "Innovative integrated methodology for the use of decontaminated river sediments in plant nursery and road building"
- Progetto Europeo SUBSED LIFE17 (ENVIT7000247):** "Sustainable substrates for agriculture from dredged remediated marine sediments: from ports to pots"
- Progetto Europeo AGRISED LIFE17 (ENVIT7269):** "Use of dredged sediments for creating innovative growing media and technosols for plant nursery and rehabilitation"
- Progetto Nazionale 2017-2019:** "Posidonia oceanica and sediments for the production of an agronomic substrate to be used in nursery activity and horticulture"
- Progetto Europeo LIFE ZEOWINE LIFE17 (ENVIT1427):** "ZEOLite and WINery waste as innovative product for wine production"

The poster also includes a section on "Fitostabilizzazione dei fanghi di depurazione per la produzione di compost" and a list of references at the bottom.

Poster developed by IRET CNR ([here](#) downloadable) and exposed during the CNR Institute Conference at the Rome Headquarters

4.5 Gadgets

During the first 18 months of the project the following gadgets have been produced:

- 1000 customized pens;
- 1000 customized post-it blocks;
- 100 customized recyclable shoppers.

All the gadgets have been marked with the SUBSED project logo, the project code (LIFE17 ENV/IT/000347) and the LIFE logo.



The Subsed gadgets produced during the mid-term period

5. SUBSED publications, articles and press releases

5.1 Publications

- [Sustainable substrates for agriculture from dredged remediated marine sediments: the experience of the Life Subsed project](#) – *Serena Doni, Cristina Macchi, Eleonora Peruzzi, Grazia Masciandaro*

5.2 Articles and press releases

During the mid-term period, the LIFE SUBSED project has been subject of the following articles:

- [Dai sedimenti dragati alla coltivazione di specie alimentari](#) – ARPAT bulletin

The screenshot shows the ARPAT website interface. At the top, there are navigation links: AMMINISTRAZIONE TRASPARENTE | ALBO ONLINE | GARE | LAVORA CON NOI | PEC | CONTATTI |. Social media icons for Twitter, Facebook, YouTube, and RSS are also present. The main header features the ARPAT logo (Agenzia regionale per la protezione ambientale della Toscana) and the logo of the Sistema Nazionale per la Protezione dell'Ambiente. A search bar is located on the right side of the header.

Below the header is a green navigation bar with the following categories: Agenzia, Temi Ambientali, Attività, Documentazione, Notizie, Dati e Mappe, and URP. The breadcrumb trail reads: Sei in: Home → Notizie → Notizie brevi → 2018 → Dai sedimenti dragati alla coltivazione di specie alimentari.

The main article title is "Dai sedimenti dragati alla coltivazione di specie alimentari". The date is 07/12/2018 07:30. The text describes the HORTISED project, which aims to demonstrate the possibility of recovering sediments from the port of Livorno and converting them into substrates for growing food species like lettuce, strawberries, and melons. It mentions the involvement of the CNR of Pisa, the University of Murcia, and the Azienda Agricola Zelari Company of Pistoia.


On the right side, there is a "Navigazione" sidebar with a search box containing "Dai sedimenti dragati alla coltivazione di specie alimentari". Below it, there are sections for "Notizie" and "Dati e Mappe". The "Notizie" section lists several articles, including "Maleodoranze a Serravalle pistoiese (PT)", "Il dato del traffico veicolare può aiutare la qualità dell'aria", and "I contatti con il pubblico dell'URP ARPAT nel 2019". The "Dati e Mappe" section lists "Dati del controllo dei campi elettromagnetici (CEM) ad alta frequenza" and "Aziende a rischio incidente rilevante: esiti delle verifiche ispettive - anni 2012-2018".

- [“We want to turn waste into a supply”](#) – Floral Daily

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Maria Castellani, Flora Toscana on project SubSed:
“We want to turn waste into a supply”

A lot of flowers in Toscana are being produced on peat but in the future they may be skipping the peat for dredge remediated sediments from the port of Livorno. At least that is the aim for the project SubSed that Flora Toscana is working on with the support of the LIFE program of the European Union. “We want to demonstrate that it is possible to convert a waste into a supply”, says Maria Castellani, responsible for the project on behalf of the coordinator Flora Toscana.




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- [“Noi giardinieri possiamo fare clima!”](#) – Lineaverde Jan/Feb 2019



'Noi giardinieri possiamo fare clima!' Sostenibilità tema centrale a IPM Essen

Un'ottima edizione quella appena svolta di IPM Essen, la fiera leader mondiale per l'orticoltura, grazie anche ad una congiuntura di mercato positiva in Europa e in Germania in particolare. Tema cardine dell'esposizione, la sostenibilità, in tutte le sue sfaccettature.

di **Renato Ferretti**
renato.ferretti@epeser.it

*Dottore agronomo e dirigente
della Provincia di Pistoia*

IPM Essen 2019 ha visto senz'altro quattro giorni di successo. Dal 22 al 25 gennaio 2019, 1548 espositori provenienti da 45 paesi hanno mostrato i loro nuovi prodotti e innovazioni lungo l'intera catena del valore aggiunto in orticoltura. In totale, cir-

ca 53.000 visitatori sono venuti a Messe Essen. Hanno ottenuto informazioni sulle ultime tendenze e beni da ordinare per la prossima stagione. La principale fiera mondiale per l'orticoltura si è concentrata sui temi della sostenibilità e del cambiamen-

- [“Caliplant, un referente en el compromiso con una agricultura sostenible”](#) – Fruta de Hueso Congress Journal

CALIPLANT, un referente en el compromiso con una agricultura sostenible

Global Agroconsulting, una de las divisiones del grupo Caliplant, presentan en el III Congreso de Fruta de Hueso el Proyecto LIFE SUBSED, el cual está llevando a cabo junto a otras empresas o entidades como FLORA TOSCANA (IT), C.R.E.A (IT), CARBONSINK (IT), CONSIGLIO NAZIONALE DELLE RICERCHE (IT) y la UNIVERSIDAD MIGUEL HERNÁNDEZ (ES).

El objetivo principal de este proyecto SUBSED es demostrar que es posible convertir los desechos (el sedimento marino dragado) en un recurso (un sustrato comercial) a través de la aplicación de técnicas sostenibles, tanto desde el punto de vista ambiental como económico. Para lograr esto, los sustratos basados en sedimentos se utilizarán en la producción de viveros de plantas ornamentales (laurel) y árboles frutales (olivos y cítricos) y el cultivo de plantas no alimenticias (protea, cala, laurel) y alimenticias (albahaca, arándanos, fresas y cítricos).

El rendimiento de este nuevo sustrato se demostrará a escala de granja en Italia y España en comparación con la producción típica de los mismos cultivos en sustrato comercial tradicional.

Estos estudios tienen entre otros resultados previstos la configuración de un protocolo para la optimización de un sustrato comercial basado en sedimentación marina, respetuoso con el medio ambiente y demostrar su idoneidad para la producción de viveros de especies alimenticias y no alimenticias y la evaluación del crecimiento y la calidad comercial de los cultivos.

Además se pretende controlar la evolución de los cultivos en base a la relación con los materiales pesados y otros contaminantes también de origen orgánico, mejorando el conocimiento sobre los sedimentos tratados y su influencia en el crecimiento de las plantas y la calidad de la fruta.

En 2019, Caliplant ya ha presentado este proyecto en AGROEXPO y FRUIT LOGÍSTICA, cosechando en sendas ferias



el interés del público asistente y siendo foco de atención por la importancia de este proyecto con la conservación de los fondos marinos y la importante reducción de la contaminación.

El III Congreso Nacional de Fruta de Hueso servirá como plataforma para la continuación de los labores de promoción de este proyecto, así como otras novedades que Caliplant ofrecerá al público asistente.

