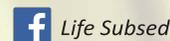




Sustainable substrates for agriculture from dredged remediated marine sediments: from ports to pots

www.lifesubsed.com



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

Project Coordinator

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LIFE17 ENV/IT/000347

01/10/2018 – 30/09/2021

The general objective of LIFE SubSed

The main aim of the **SUBSED project** is to demonstrate that is possible to supply (a commercial) substrate for agriculture (a safe and environmentally friendly) in order to achieve the objectives of the LIFE programme. The project is applied to nurseries and greenhouses, using plants such as trees (olive trees), shrubs (protea, calluna), and woodland stragglers. The performance of the substrate is evaluated at farm scale in the 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.

The expected results of LIFE SubSed

The main result of the **SUBSED project** is the set up of a

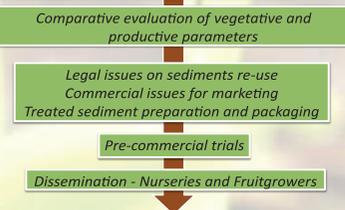
normative and legal issues related to the use of dredged remediated sediment as substrate in agriculture;

substitution of peat (80-90% less).

LIFE SUBSED 18^o month Monitoring Meeting

27 March 2020

- 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 facing the



LIFE SubSed Beneficiaries



Consiglio Nazionale delle Ricerche
Istituto di Ricerca sugli Ecosistemi Terrestri



18th Month Monitoring Meeting, 27st March, 2020,
Video Conference

Maria Castellani, Coordinator



Actions from II 2019 to I 2020

ACTION A.1

Review of the EU and national regulations on the use of sediments for plant nursery and of the analytical protocols

All partners

Foreseen Start Date: IV 2018 Actual Start Date: IV 2018

Foreseen End Date: II 2021

This action is lasting longer due to the request of **authorization to the Tuscany Region** for the Italian trial sites.

According to the modification for accomplishment to the Italian law also the **analytical protocols are being reviewed**. In fact for one of the three trial sites we moved from open air to greenhouse and we reduced the amount of sediment to be tested **in order to stay below 5 tons** as ruled in D.Lgs.152/2006 art.211.

Actions from II 2019 to I 2020

Deliverable 2 Action A1

EXPERIMENTAL ACTIVITIES AUTHORIZATION FOR THE USE OF SEDIMENTS IN ITALY



INTRODUCTION

In the Italian legislation there is no clear reference to the use of a dredged sediment as an agricultural substrate. For this reason the sediment, even if phyto-remediated, is managed as a waste and not as a by-product.

Based on their origin and composition and according to the European Waste Catalogue (see EU Parliament Decision 2000/532/CE modified by Decision 2001/118/CE, 2001/119/CE and 2001/573/CE) the sediments covered by the LIFE SUBSED project are classified as non-hazardous dredged sediments: EW Code 17 05 06

ITALIAN LEGISLATION: D.Lgs. 152/2006 art. 211

D.Lgs. 152/2006 (and its integrations) is the Italian law concerning waste.

D.Lgs. 152/2006 does not include exceptions concerning experimental activities with non-hazardous waste and needs an authorisation by the competent Authority (art. 211).

This article refers to previous 208 and 210 that rule the authorisation for a landfill. The only significant difference is a shorter process (half time) to obtain it, as long as:

activities do not result in economic benefit

facilities have a potential not higher than 5 tons/day

Authorization lasts 2 years, unless extended for a maximum of 2 years

Authorization is requested to the Region

Landfill disposal of all materials produced by the experimental activities at the end of the trials.

Actions from II 2019 to I 2020

ACTION A.1

LEGISLATION OF TUSCANY REGION: D.G.R.T. 1040/2009

In application of the national legislation (D.Lgs. 152/2006-Art.211), Tuscany Region has deliberated the proceedings (D.G.R.T. 1040/2009):

acquire the opinion of "Conferenza dei Servizi";

"Conferenza dei Servizi" is a panel of involved public entities: Region, Municipality, ASL (Local Health Company), ARPAT (Company for the protection of the environment in Tuscany Region) at which the applicant is invited to join.

request an authorisation attaching the project of the experiment and the technical documentation.

Requested documents:

- Technical report indicating the types of waste, E.W.C. (in Italian codice CER), quantities, processes, timing and impacts on other environmental matrices (soil, water, air);
- Monitoring plan on the processed materials and on environmental effects;
- Analysis of risks for human health of people involved in the experiment;
- Proposal for a technical and operational protocol in which are detailed the type of checks requested to A.R.P.A.T. on behalf of the Region and paid by the applicant;
- Detailed design of the works to be carried out;
- Indications of the costs of disposal, dismantling of the experimental area

The authorization will be granted after:

- acquisition of the positive opinion of "Conferenza dei Servizi"
- signature of the agreement on environmental control protocol between the applicant and the Settore Rifiuti e Bonifiche (Waste and Remediation Department) of Tuscany Region
- payment of financial guarantee by the applicant towards the Region of Tuscany

At the end of the experimental activities the applicant will present a report certifying the results achieved in relation to the intended purpose.

AUTHORIZATION REQUEST BY FLORA TOSCANA FOR LIFE SUBSED

Flora Toscana, as LIFE SUBSED project Coordinator and manager of Italian demonstration trials, has presented authorization request to Tuscany Region to use the phytoremediated sediments.

The demonstration trials will be carried out in three different places, so the requested authorizations are three, one for each site. A document named "Progetto" is common to all three and represents the framework in which the individual requests are inserted.

It contains:

- the purpose
- the sites
- the type of waste (EWC code 17 05 06) and the quantities (in tons and cube meters) for each site
- the crops being tested (Olive, Strawberry, Blueberry, Cherry Laurel, Calla lily, Protea cynaroides, Basil)
- environmental matrices
- setting up of the trial facilities
- technical/scientific trials on plants and substrates
- proposal for technical checks of environmental factors partly by the applicant and partly by ARPAT
- financial guarantee calculation
- restoration of the area at the end of the trials
- protection and safety of people
- acoustic impact

Actions from II 2019 to I 2020

ACTION A.1

- In attachment for each site:
- Nursery production authorization for each site
- Agreement between Flora Toscana and each nursery grower
- Chemical analyses and characterization of waste
- Environmental frame
- Plans
- Geological and hydrogeological reports
- Experimental reports
- Financial guarantee calculation

Actions from II 2019 to I 2020

ACTION A.1

After the first Conferenza dei Servizi some integrations have been requested concerning:

- origin of sediment
- plans in 1:2000 scale of the surrounding area to identify noise or smell receptors
- new plans of the trial sites
- explanation of the phases of the experimentation and the related technical operating methods
- new calculation of financial guarantees
- the indication of the monitoring manager
- new proposal for technical checks of environmental factors
- planning of the olfactometric investigations if necessary
- acoustic impact evaluation
- clarification of the characteristic of the collection basin at the entrance of the trial sites in order to avoid dispersions and runoff in the environment. For two of the three sites due to the possibility of flood risk, as recorded in the hydrogeological maps, protective and lifting systems for the sediment are envisaged upon arrival and during the trial to avoid a max 50 cm high potential flood
- irrigation system description
- clarification about the fee due to the Tuscany Region

Concerning point 10 Flora Toscana proposed:

- to use some pre-existing benches for the site where Protea and Basil will be grown
- for the site where Olive, Strawberry, Blueberry, Cherry Laurel will be grown a waterproof plastic barrier will be created

Actions from II 2019 to I 2020

ACTION A.1

Once the Region of Tuscany acquired the integrations, a second Conferenza dei Servizi was called. Positive opinion was given.

The signature of the agreement on environmental control protocol has not been requested by the Region of Tuscany as it was already stated in the Conferenza dei Servizi report.

At this stage Flora Toscana is waiting for the Tuscany Region's authorization

A1.3
A1.4

Updating of monitoring and analyses protocols

Actions from II 2019 to I 2020

ACTION B.1

Phytoremediated Sediment treated via landfarming process

CNR

Foreseen Start Date: IV 2018 Actual Start Date: IV 2018

Foreseen End Date: I 2019 Actual End Date: I 2019

ACTION C.1

Monitoring and validation of treated sediments

CNR

Foreseen Start Date: I 2019 Actual Start Date: IV 2018

Foreseen End Date: II 2019 Actual Start Date: II 2019

These actions were carried out and completed

Actions from II 2019 to I 2020

ACTION B.2

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

ACTION B.3

Demonstration of the use of remediated sediments as substrate for non food crops cultivation (from plantlets to final production: Flowers - ornamental)

ACTION B.4

Demonstration of the use of remediated sediments as a substrate for food crops production

FLORA TOSCANA and all the partners

The delay due to the request for authorization has slowed down the progress of these actions

Foreseen Start Date: II 2019

Foreseen End Date: I 2021

Actions from II 2019 to I 2020

ACTION C.2

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

ACTION C.3

Monitoring and validation of the use of remediated sediments as a substrate for plant nursing and cultivation: food crop production

CREA, CARBONSINK; UMH

The delay due to the request for authorization has slowed down the progress of these actions

Foreseen Start Date: III 2019

Foreseen End Date: II 2021

***Performance indicators monitoring
FLORA TOSCANA and all the partners***

This monitoring activities consists of measuring the efficiency of the performance indicators in order to fulfill the environmental and social viability of the LIFE SUBSED process.

The group of indicators will be revised in each of the projects coordination meetings in order to check any irregularities.

Subaction C.5.1 KPI Webtool

All partners will monitor and measure during all the project duration the LIFE SUBSED performance indicators in order to support the coordinating beneficiary FLORA TOSCANA in updating and reporting the KPI Webtool upon throughout the project implementation.

***Foreseen Start Date: IV 2018 Actual Start Date: IV 2018
Foreseen End Date: III 2021***

Actions from II 2019 to I 2020

ACTION D.1

Project dissemination plan: website, material, articles

ACTION D.2

Project dissemination plan: events, networking, contact with Institutions and policy makers

All Partners

This task is ongoing as scheduled.
See LIFESUBSED Website and Deliverables

Foreseen Start Date: IV 2018 Actual Start Date: IV 2018

Foreseen End Date: III 2021

Actions from II 2019 to I 2020

ACTION E.1

Project management

Flora Toscana and all partners

This task is ongoing as scheduled and all the beneficiaries are collaborating in order to overcome the unexpected issues

Foreseen Start Date: IV 2018 Actual Start Date: IV 2018

Foreseen End Date: III 2021

FUTURE ACTIONS

Action C.4

Monitoring of socio-economic impact of the project and LCA
CarbonSink, FLORA TOSCANA and all the partners

Expected results:

- socio-economic impact of the project
- LCA document with the elaboration and analysis of project data in terms of technical and environmental impact of the project process

Foreseen Start Date: IV 2020

Foreseen End Date: III 2021

FUTURE ACTIONS

Action B.5

Training courses, workshops and guidelines for project replicability and transferability

Foreseen Start Date: IV 2020

Foreseen End Date: III 2021

Action B.6

SUBSED Business Plan

Foreseen Start Date: I 2021

Foreseen End Date: III 2021

FLORA TOSCANA and all the partners