



EU CAP Network seminar

Support Facility for Innovation and Knowledge exchange including EIP-AGRI

EU CAP Network Seminar 'Smart circular farming to address high energy and fertiliser prices'

Field visits

On Tuesday 6 December 2022, the first day of the EU CAP Network Seminar 'Smart circular farming to address high energy and fertiliser prices', participants will have the opportunity to attend field visits in the afternoon. These visits will present inspirational cases from the area around Porto.

Due to logistical reasons, only a limited number of participants is possible at each field visit, so participants will be split automatically into groups. Further information will be given at the event.

Field visit BioChorume/BioSlurry and FERTIPRADO/ECOSEED

- **BioChorume/BioSlurry EIP-AGRI Operational Group**
<https://gobiochorume.wixsite.com/gobiochorume>
<https://ec.europa.eu/eip/agriculture/en/find-connect/projects/biochorume>

Intensive dairy cattle breeding has a relevant social and economic impact in Portugal, particularly in the northern region. This activity generates a high flow of livestock effluents (slurry), with high levels of essential nutrients for plant growth, which can be introduced into forest production systems. These effluents can provide a good alternative to mineral fertilisers, not only from an economic perspective, but also from the point of view of soil fertility resilience. In the BioChorume OG, the effect of increasing doses of slurry on tree growth was evaluated in clones of *Paulownia* and *Populus*, as they are genotypes that have a high efficiency in the mobilisation of soil nutrients and in the capture of CO₂ from the atmosphere, as well as high biomass calorific value. In this sense, a demonstration field was installed, where trees were planted with the compasses of: 2.5 x 1.5 m and 2.5 x 0.75 m, respectively for *Paulownia* and for *Populus*. In the field, different treatments were



performed, either with or without inoculation prior to transplantation, with mycorrhizal arbuscular fungi and plant growth-promoting bacteria.

Operational Group coordinated by AVELEDA S.A. company with public and private partners: National Institute of Agricultural and Veterinary Research (INIAV), Portuguese Catholic University - School of Biotechnology (UCP-ESB), National Federation of Cooperatives of Milk Producers (FENALAC) and the Forest Association of Portugal (FORESTIS).

- **FERTIPRADO/ECOSEED**

<https://www.fertiprado.pt/investigacao/ecoseed/>

The project ECOSEED - *Optimization of the seed microbiome to obtain fertilizer phenotypes adapted to climate change* focuses on the development of a set of actions in mixtures of biodiverse seeds for pasture with the main objective of using soil microorganisms, such as nitrogen-fixing bacteria in symbiosis with legumes and other types of bacteria that promote plant growth in association with *Graminae* plants. The goal is to design innovative inoculants incorporated into microbial consortia, which allow an increased plant productivity, improvement of soil quality and avoid the use of chemical fertilisers, contributing to the reduction of environmental impacts and economic costs associated with their dependence. The microbial coatings already developed is based on microorganisms that provide resistance to abiotic and biotic stresses in biodiverse seed mixtures, allowing to avoid/reduce the use of chemical fertilisers and adaptation to current climate changes.

The visit will go through fields of vineyards where these Ecoseeds mixtures are sown between the lines.

Field visit FREETILIZER and ALCHEMY

- **PIPEMASTERS/FREETILIZER**

<https://www.pipemasters.pt/environmental-projects-freetilizer>

The **FREETILIZER** technology is an innovative Biotechnological Industrial Solution focused on the profitable valorisation of organic by-products – *circular economy*. **FREETILIZER** Technology consists in the conversion of nutrients present in organic by-products, using a complex of selected enzymes, in a reactor with homogenisation, agitation, pH and temperature controlled. The process ends with a vacuum drying step – efficient drying, which results in the formation of stabilized solid and liquid organic fertilisers.

During the visit, the Technology and Industrial Prototype will be presented, as well as Case Studies (pig slurry, chicken manure and vegetable byproducts valorisation).

FREETILIZER is subsidiary company of PIPEMASTERS supported by European Structural and Investment Funds.



- **ALCHEMY**

<https://www.cbqf.esb.ucp.pt/en/cbqf-projects?nid=17493&token=8c8460094e5d80b8b2f632b537cf30fa>

The Alchemy research project results from a strategic partnership between the Universidade Católica Portuguesa (UCP), through the Escola Superior de Biotecnologia (ESB), the company Amyris Bio Products Portugal, a subsidiary of Amyris Inc. and the Government of Portugal, through the Agency for Investment and Foreign Trade Portugal (AICEP). It involves an investment in research, development and innovation of around US\$50 million over five years, of which around 60% results from private funding and the remainder results from co-financing through Portugal 2020 and the Operational Program of Regional Development (ERDF).

The Alchemy project aims to contribute to the optimisation of the efficiency of the biomolecule production process and to investigate new applications for the by-products/residues resulting from this process, thus enhancing the development of new molecules of high commercial interest, in particular in agriculture where this biofertiliser was developed.

In the Framework of Alchemy project between the ESB and Amyris the visit will be to the UCP for presenting in the Lab the main steps to obtain a new product ZeoVink that results from valorisation of a synthetic biology waste resulting from fermentation into an agricultural value-added product. In addition, during the visit the developments obtained by ESB in different types of biofertilisers containing plant growth-promoting bacteria and arbuscular mycorrhizal fungi from different research projects will be presented.