# CoopVitiLoop: Implementation of composting to close the organic matter cycle in the co-operative wine sector


## Summary

Composting is a robust and validated alternative for the self-management of organic solid waste, but its practice is not widespread in the wine sector. This aerobic process degrades and stabilises organic matter until a humus-like soil is obtained. Applying composting for the self-management of waste generated in wine cooperatives would provide the direct benefit of using compost as an organic fertiliser in the vineyards themselves, for both conventional and organic crops. This would cut emissions and costs related to transporting this waste, decrease the use of inorganic and organic fertilisers, close the organic matter cycle and foster actions to boost the circular economy, where waste is treated as a resource. It also contributes to increasing organic matter in soils, which improves water retention, a fundamental aspect for better adapting these crops to climate change.


## Objectives

The main objective of this project is to close the carbon cycle in the wine sector by optimising co-composting to sanitise and stabilise the waste and by-products obtained from grape harvesting, wine processing and wastewater treatment for subsequent application as a biofertiliser/organic soil conditioner. This pilot project aims to demonstrate the environmental and economic benefits of organic waste self-management in this sector, encouraging farmers and winegrowers to use organic fertilisers from this waste, thereby closing the organic matter cycle.

## Description of the actions planned in the project

**Activity 1. Physical-chemical and biological characterisation of waste and preliminary composting trials**

-Full characterisation of the recovered products: stalks, skins, sewage sludge and pruning waste

**Activity 2. Development of the pilot prototype**

-Design and assembly of the pilot prototype. Based on the results obtained in activity 1 for the design of the pilot prototype, the best configuration (loading and unloading, aeration, temperature monitoring) will be assessed to ensure optimal sanitisation and stabilisation of the material in the shortest possible time.

**Activity 3. Pilot plant installation and commissioning**

-On-site treatment of solid waste generated in a pilot plant to assess the aerobic biodegradation process at the demonstration scale. The pilot plant will be a mobile unit, allowing waste from different wineries in the operational group to be treated on site, increasing the impact of the project. This activity includes installing and commissioning the pilot plant at each of the test locations.

**Activity 4. Demonstration-scale co-composting process**

-Degradation and stabilisation of organic matter in the pilot unit. Process monitoring.
-Compost maturing in maturing piles
-Analysis of the quality of the obtained compost

**Activity 5. Assessment of pathogenic fungal spore elimination (*Plasmopara viticola*) during the composting process**

- Obtaining part of the infected strains
- Composting downy mildew-infected waste

- *Plasmopara viticola* spore germination tests

**Activity 6. Study of soil fertilisation, initial plant vigour and mesocosm incubation**
- Agronomic assessment of compounds obtained from vineyard by-products
- Vine establishment capacity in soils fertilised with vineyard by-product compost
- Soil microcosm incubation to study nitrogen mineralisation in the products and its effects on microbial activity.

**Activity 7. Technical, economic and environmental feasibility study of the system developed**
-Integration and use of results based on a technical-economic assessment

**Activity 8. Participation in tasks for disseminating results**
- Developing a comprehensive plan for sector waste self-management.
- Dissemination of results: information on the website and social media.

Transfer/dissemination actions

## Expected results and practical recommendations

Implementation of the CoopVitiLoop project is expected to provide a high-quality, stable and sanitised compost with a high agronomic value through the implementation of co-composting treatment at the different wineries involved in this study. The test of this new concept will also be validated with the results from the wineries involved, generating enough data to ensure robust decision-making for future actions. Moreover, the effectiveness of the compost on organic matter development, nutrient release and soil retention capacity will be demonstrated.
As well as the aforementioned environmental aspects, a technical, economic and social feasibility study will be carried out to ensure this technology can be applied in the future, thus contributing to minimising issues arising from managing waste.

## Leader of the Operational Group

**ORGANISATION:** COVIDES, SCCL

## Coordinator of the Operational Group

**ORGANISATION:** CATALAN FEDERATION OF AGRICULTURAL COOPERATIVES (FCAC)

## Other members of the Operational Group (grant recipients)

**ORGANISATION:** CEVIPE GRUP COOPERATIU, SCCL

## Other members of the Operational Group (not recipients of the grant)

**ORGANISATION:** BALMES UNIVERSITY FOUNDATION (BETA TECHNOLOGICAL CENTRE)

## Subject area(s) of application

| | |
|---|---|
| ☐ | Agricultural production system |
| ☐ | Agricultural practice |
| ☐ | Agricultural equipment and machinery |
| ☐ | Livestock farming and animal welfare |
| ☐ | Vegetable production and horticulture |
| ☐ | Landscape / Territorial management |

| | |
|---|---|
| ☐ | Pest and disease control |
| ☒ | Fertilisation and nutrient management |
| ☐ | Soil management |
| ☐ | Genetic resources |
| ☐ | Forestry |
| ☐ | Water management |
| ☐ | Climate and Climate Change |
| ☐ | Energy management |
| ☒ | Waste and by-product management |
| ☐ | Biodiversity and environmental management |
| ☐ | Food quality/processing and nutrition |
| ☐ | Supply chain, marketing and consumption |
| ☐ | Competitiveness and agricultural and forestry diversification |
| ☐ | General |

## Geographical area(s) of application

| PROVINCE(S) | REGION(S) |
|---|---|
| | Alt Penedès, Baix Penedès |

## Dissemination of the project (publications, conferences, multimedia, etc.)

Partners' websites, social media, sector transfer/dissemination conferences and workshops

## Project website

## More information on the project

| PROJECT DATES | TOTAL BUDGET |
|---|---|
| **Starting date:** July 2021 | **Total budget:** €151,982.69 |
| | **DACC funding:** €70,284.82 |
| **Current status:** Under way | **EU funding:** €53,021.89 |
| | **Own funding:** €28,675.98 |

## With funding from:

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*Order ARP/113/2021 of 20 May, approving the regulatory bases for grants for cooperation for innovation by promoting the creation of European Association for Innovation operational groups in the areas of agricultural productivity and sustainability and the execution of innovative pilot projects by those groups, and Resolution ACC/1660/2021, of 27 May, announcing the call for the grant.*

Generalitat de Catalunya
**Departament d'Acció Climàtica, Alimentació i Agenda Rural**

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