

New scenarios for the industrial production of aromatic and medicinal plants in traditional Catalan farming system

Summary

The project aims to analyse the behaviour of different commercial varieties of a number of aromatic and medicinal plant (AMP) species that could be grown on a commercial scale in different farming scenarios in Catalonia.

We have chosen species with a good market demand for both the dried plant and essential oils and which can be adapted to different growing conditions.

During this working period, we aim to collect enough information on crop management, including mechanisation, especially for weeding and harvesting, and industrial processing systems (drying and distillation) that help design a strategy for real, large-scale farming.

At the same time, we want to see if this type of crop has an impact on pollinating insect populations and if they could be compatible for cultivation in special protection areas (SPAs).

Objectives

The objectives are to:

1. Assess the agronomic response, quality (chemical composition) and cultural and mechanisation needs for large-scale cultivation of certain AMP species to propose integrated scaling of production within the current main cultural management systems, among members of the Fruits de Ponent cooperative and the irrigators in the Segarra-Garrigues irrigation system.
2. Obtain a real, confirmed analysis of the economic and technical viability of industrial-scale production of some AMP species introduced as possible crops in the agricultural systems in Catalonia. The analysis must include the necessary cultivation machinery and primary processing equipment (for distillation and drying) serve as a decision-making tool for scaling the crop size to establish future industrial production scenarios that complement and diversify current agricultural production.
3. Observe the compatibility of the cultural management for these crops with the conservation of steppe bird species in the agricultural areas declared SPAs thereby including AMP farming as a possible productive alternative in SPAs.
4. Assess the impact of these crops on biodiversity by measuring their role as enhancers and maintainers of pollinating insect populations on farms and adjacent agricultural areas.

Description of the measures planned in the project

Work will be conducted in four areas:

Agriculture: monitoring farms to evaluate yields of biomass and essential oils and their quality in the different varieties of each species tested at different sites. Verify available crop management systems and define a possible large-scale production scenario.

Environmental: compare crop management and phenology of these AMP species with the bird species nesting in SPAs and thus needing special protection measures, and assess the role of AMP crops as enhancers of pollinating insect communities.

Biomass transformation technology: compare the commercial possibilities of existing drying and distillation facilities on the market, choosing one that best suits the needs of scaled-up production.

Marketing and market: samples of both essential oils and dried plants obtained from the plots will be used to carry out a national and international market survey and attempt to take opportunities for entering into commercial agreements that ensure the scaling up of production.

Expected results and practical recommendations

The results the project hopes to achieve are:

- Agronomic response (empirical data on biomass and essential oil yield) of the species cultivated in different areas with the irrigation quantities tested and learning about their cultural management in terms of weed control, fertilisation needs and phytosanitary problems.
- Chemical characterisation (chemotyping) of the biomass obtained for the different varieties tested, as a measure of quality.
- Analysis of the economic viability of the crops of chosen species.
- Definition of production areas by species based on the results, the information consulted and market demand.
- Availability of plant material.
- Definition of the need for industrial scale crop mechanisation (affecting weeding and harvesting technology).
- Definition (chosen technology and sizing) of a transformation facility (distiller, dryer) on an industrial scale.
- Qualitative evaluation of the suitability and compatibility of cultivating these species with the conservation of steppe bird species.
- Contribution of these crops as enhancers of pollinator communities in the agricultural landscape.
- First contacts with industry with the commercial material produced (dry plants and essential oils).

Leader of the Operational GroupORGANISATION: **Cooperativa Fruits de Ponent SCCL**CONTACT E-MAIL: marc.nart@fruitsponent.com direccio@fruitsponent.com**Coordinator of the Operational Group**ORGANISATION: **Forest Sciences and Technology Centre of Catalonia**CONTACT EMAIL: roser.cristobal@ctfc.es**Other members of the Operational Group (grant recipients)**ORGANISATION: **Aigües del Segarra-Garrigues S.A.**CONTACT E-MAIL: xpetit@aigues-asg.esORGANISATION: **Forest Sciences and Technology Centre of Catalonia**CONTACT EMAIL: roser.cristobal@ctfc.es**Other members of the Operational Group (not recipients of the grant)**ORGANISATION: **VENTÓS Laboratory**CONTACT E-MAIL: gparramon@ventos.com**Subject area(s) of application**

<input checked="" type="checkbox"/>	Agricultural production system
<input checked="" type="checkbox"/>	Agricultural practice
<input type="checkbox"/>	Agricultural equipment and machinery
<input type="checkbox"/>	Livestock farming and animal welfare
<input checked="" type="checkbox"/>	Vegetable production and horticulture
<input type="checkbox"/>	Landscape / Territorial management
<input type="checkbox"/>	Pest and disease control
<input type="checkbox"/>	Fertilisation and nutrient management
<input type="checkbox"/>	Soil management
<input type="checkbox"/>	Genetic resources
<input type="checkbox"/>	Forestry
<input type="checkbox"/>	Water management
<input type="checkbox"/>	Climate and Climate Change
<input type="checkbox"/>	Energy management
<input type="checkbox"/>	Waste and by-product management
<input type="checkbox"/>	Biodiversity and environmental management
<input type="checkbox"/>	Food quality/processing and nutrition
<input type="checkbox"/>	Supply chain, marketing and consumption
<input type="checkbox"/>	Competitiveness and agricultural and forestry diversification
<input type="checkbox"/>	General

Geographical area(s) of application

PROVINCE(S)	REGION(S)
Lleida	Garrigues, Segarra, Noguera

Dissemination of the project (publications, seminars, multimedia, etc.)

Communication: as this is general information with no specific technical content, the following actions are proposed:

- Posters and signs on the fields indicating the name of the project, participants and the sources of funding.
- Social media of each member of the operational group and from the second year onwards, short audio files, videos or briefs reporting relevant facts about the project will be posted.
- A sample of dried plants and essential oils will be created as promotional material to offer to the consumer companies or attendees at dissemination activities.
- A short video will serve as both promotional and dissemination material and will be distributed by professional associations interested in the project: STANPA, AEFAA, AFEPADI, etc.
- In the last year of the project, when the farms have achieved a degree of consolidation, we will participate in at least two trade fairs to publicise the project (if possible).
- From the second year of the project, a couple of open days will be offered to visit farms and facilities, aimed at professional farmers and the consumer sector (laboratories and wholesalers).
- The results of the project (intermediate and final milestones) will be posted on partner websites and the final milestones on industry dissemination platforms (Catalan Ministry of Agriculture, Livestock, Fisheries and Food (DARP) and Catalan Forest Observatory websites and social media).

Dissemination: professional dissemination will take place in 2022:

- Two in-person technical conferences (if possible) aimed at the agricultural sector and the AMP industrial consumer sector with visits to production fields, presentations on the results obtained, the economic viability of the crop and the operation of the future transformation centre and its facilities. These conferences will be organised through the DARP Annual Technology Transfer Plan (PATT) conferences.
- Publishing of six different crop species route maps.
- Two informative articles in agricultural sector trade journals (*Agricultura*, *Profesional agro*, *Phytoma*, *Horticultura*, *Fruticultura profesional*, *Agricultura y Ganadería Ecológica*, etc.)
- Two informative articles in industrial sector trade journals (*Industria Cosmética*, *BeautyProf*, *Industria Química*, *Farmaespaña Industrial*, *Revista de Fitoterapia*, *Revista Alimentaria*, *Tecnoalimen*, *Alimarket*, *Erboristeria Domani*, etc.)

Project website

There is no website. The project will be present on the websites of the participating members.

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2020	Total budget: €179,870.00
Completion date (month-year):	DARP funding: €73,509.08
Current status: Underway	EU funding: €55,454.22
	Own funding: €50,906.70

With funding from:

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Order ARP/133/2017 of 21 June, 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 ARP/1531/2019, of 28 May, announcing the call for the grant.



Generalitat de Catalunya
**Departament d'Agricultura,
 Ramaderia, Pesca i Alimentació**



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