

## NEWSLETTER#3 August 2024



« Identification of Medicinal/Aromatic Plants (MAP) properties and improving quality, nutritive value, and storability of fresh and dry products to support SME competitiveness »

### Opti-AromaQ



## Opti-AromaQ – Project Overview

Opti-AromaQ aims at developing an innovation approach on nutritive value and increased postharvest storage of MAP in Cyprus by employing high tech (hydroponics, biofortification) and safe (natural sanitizers) and quality (added value products, drying conditions) approaches. The main objectives of the Opti-AromaQ project include: 1) the introduction into cultivation of new MAP and reduced the uncontrolled wild harvest, 2) the definition of optimum cultivation management (for example mineral levels) in order to produce high nutritive value produce for selected MAP species, 3) determination of the postharvest conditions (fresh and dry material) for the Cypriot MAP, in order to increase the storage time and maintaining the fresh produce quality, 4) the outline application strategies of essential oils for food safety and food shelf-life extension, 5) the establishment of Biofortification strategies on MAP in Cyprus, for high added- value products, 6) the establishment for the first time a methodology of EOs use for fresh produce preservation in Cyprus, 7) the demonstration and training/mobility for early stage researchers and professionals but also Packinghouse owners and herbal/cosmetics owners in MAP sector and essential oil usages, 8) engagement of relevant stakeholders/public to stimulate the development of a voluntary policy for MAP, 9) the transfer of knowledge (gained from laboratories and packing houses) to the sector and food-chain operators through training activities.

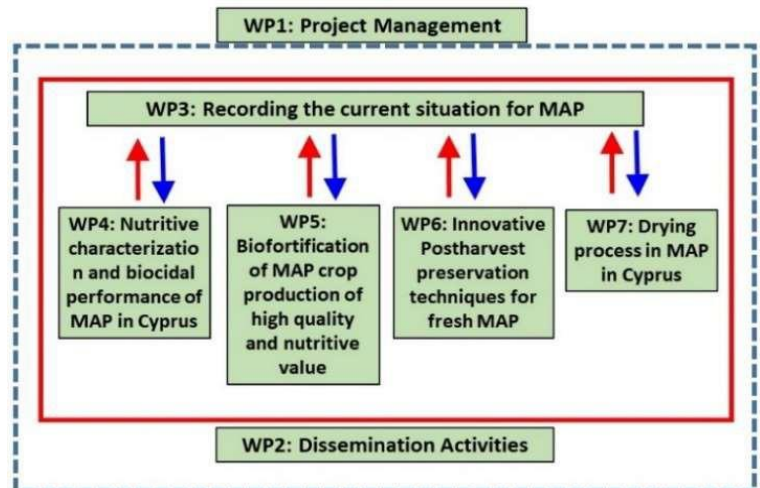


Figure 1. Opti-AromaQ Work Packages

## Work description and key results

**WP1 – The project management team** led by the project coordinator (Dr. Nikos Tzortzakis) monitors the progress and facilitates the completion of the project actions, despite any problems that arise. **Scientific and stakeholders' committees** have been formed and functioning for the benefit of the project and according to project objectives.

**WP2 –**

- ✓ **Workshop (7 June 2024) entitled "Promoting Nutritive value and marketing of Medicinal and Aromatic Plants"**
- ✓ **Training School (7 June 2024) on Essential oils properties and usages**
- ✓ **Website/ <http://opti-aromaq.cut.ac.cy/>**
- ✓ **FB (Opti-AromaQ | Facebook) and Instagram (Opti-AromaQ (@optiaromaq) • Instagram photos and videos).**
- ✓ **2 newsletters / Project Leaflet in GR and EN / 2 Articles for the public**
- ✓ **Banner / poster**
- ✓ **And the following peer review articles and conference presentations:**



Figure 2. Photo from the Workshop on 7 June 2024

**Scientific publications:** Additional 2 **scientific articles** have been published in peer review journals during 2024 by Chrysargyris A., et al. (2024) ([Biology | Free Full-Text | Phytochemical Profiles and Biological Activities of Plant Extracts from Aromatic Plants Cultivated in Cyprus \(mdpi.com\)](#)) (Biology, IF:3.6), and by Chrysargyris A. (2024) ([Agronomy | Free Full-Text | It Runs in the Family: The Importance of the Lamiaceae Family Species \(mdpi.com\)](#)) (Agronomy, IF: 3.3).

Conference Presentations: The results of the project have been presented in 5 conferences, from 2023-2024:

1. Poster presentation at the **3<sup>rd</sup> Food Chemistry Conference "Shaping a Healthy and Sustainable Food Chain Through Knowledge"**, 10-12 October 2023, Dresden, Germany. "Biological activities of plant extracts from Cypriot aromatic plants and herbs".
2. Oral presentation at the **31<sup>o</sup> Conference of the Greek Horticulture Society** 29 October-2 November 2023. "Effect of different nitrogen and copper concentration on hydroponic cultivation of *Sideritis cypria*".
3. Oral presentation at the **"Natural Product Chemistry and Drug Discovery" Annual Meeting/Conference of the Pan-Balkan Alliance of Natural Products and Drug Discovery Associations PANDA Alliance**, 29 November – 3 December 2023. "Storage conditions of medicinal/aromatic plants and use of essential oils and hydrosol as an alternative natural postharvest sanitation mean".
4. Oral presentation at the **3<sup>rd</sup> Black Sea Association of Food Science and Technology Congress (B-FOST 2023)**, 13-14 December 2023. "Medicinal and aromatic plants essential oils, hydrosols and their main component for the preservation of fresh produce".
5. Oral presentation at **V European Horticultural Congress - EHC2024 (SHE2024)**, 12-16 May 2024, Bucharest, Romania. "Effects of storage temperature on fresh sage and its use for the preservation of tomato fruits".
6. Oral and poster presentation at **V European Horticultural Congress - EHC2024 (SHE2024)**, 12-16 May 2024, Bucharest, Romania. "Fresh basil preservation with Cypriot oregano extracts".

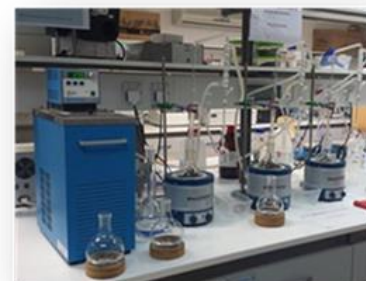
### WP3 – Recording the current situation for the MAP sector.

- ✓ Both CUT and ANELEM collected relevant info (through literature reviews and surveys) and contributed to the deliverable regarding the definition of the MAP sector in Cyprus (cultivation areas, species, yield, etc.).
- ✓ The 3 specific questionnaires have been produced (farmer's cultivation practices, packagers/processors of MAPs, for the public sector) by ANELEM, have been distributed and data have been collected, analyzed and have been reported. The questionnaires were filled in by MAP farmers, processors/packers and public and municipal authorities.

### WP4 – Nutritive characterization and biocidal performance of MAP in Cyprus

- ✓ The biological properties (antioxidant, antimicrobial, anticancer) of 6 medicinal plants for the Cypriot flora have been extensively studied.
- ✓ Both the plant extracts and the produced essential oils have been analyzed.

Figure 2. Preparation of the plant extracts and essential oil extraction



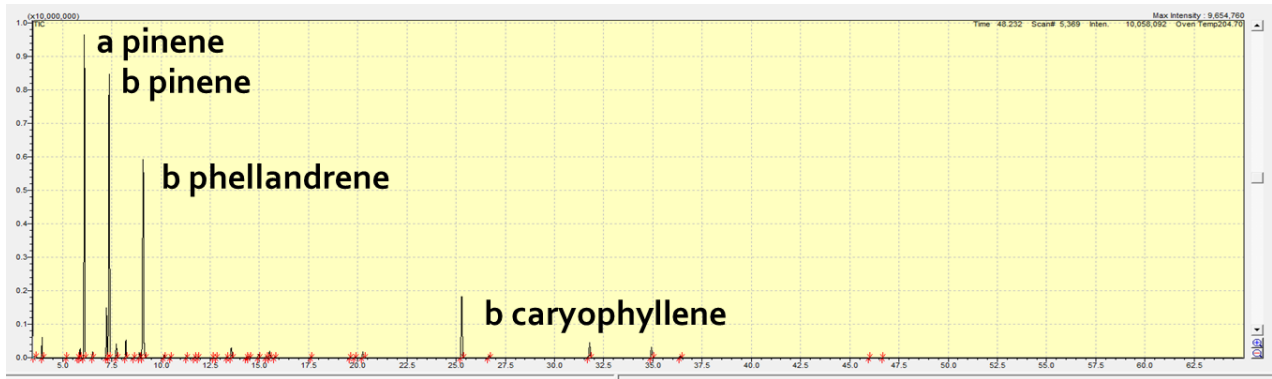


Figure 3. Chromatogram of the GCMS analysis of the essential oil of *Sideritis cyprica* plants

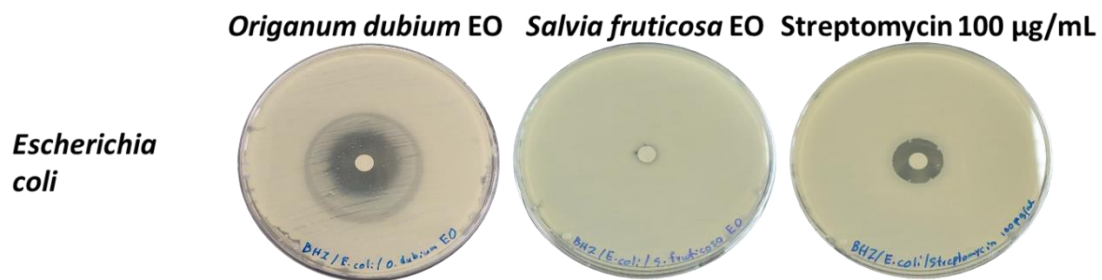


Figure 5. Effect of the essential oils of *Origanum dubium* and *Salvia fruticosa* against *E. coli* pathogen

#### WP5 – Biofortification (hydroponics and field)

- ✓ *Sideritis cyprica* and *Origanum dubium* have been successfully introduced in intensive hydroponic cultivation.
- ✓ Based on the results of the hydroponic cultivation, a field cultivation has been established in MCH GARDENS LTD, in Anogyra village.



Figure 6. Introduction of *Sideritis cyprica* in hydroponics (NFT- Nutrient Film Technique)



Figure 7. Field cultivation of *Sideritis cyprica* in Anogyra village

## WP6 and WP7. Innovative Postharvest preservation techniques (WP6) for fresh MAP and drying processes (WP7).

- ✓ Optimize storage conditions of medicinal plants (*Melissa officinalis*)
- ✓ The WP7 aims to establish the drying processes and effects on quality for MAP in Cyprus, which is undetermined with severe produce losses during storage and/or transportation. Different drying temperatures and drying conditions have been employed and then the produced essential oils have been analyzed for their quality and properties.

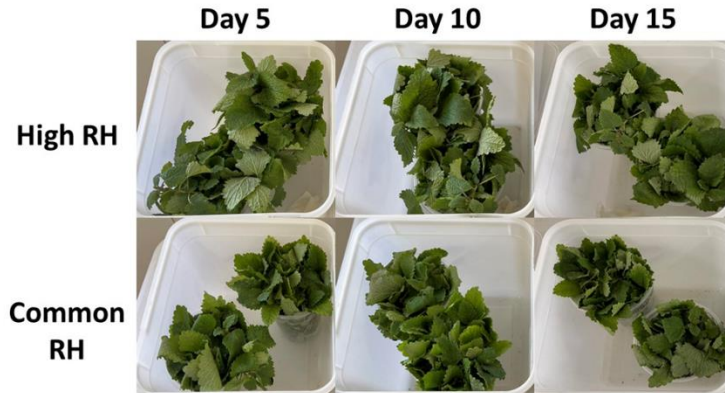


Figure 8. Effect of different humidity levels on storage of *Melissa officinalis*, during a 15-day storage period.

### Opti-Aroma Q Participants:

- Cyprus University of Technology (CUT), Cyprus
- E.U.C. Research Centre Ltd (EUC), Cyprus
- M.CH.GARDENS LTD (GARDENS), Cyprus
- Development Agency of Limassol LTD (ANELEM LTD), Cyprus

### Foreign Research Organizations:

- National & Kapodistrian University of Athens (NKUA), Greece
- University of Belgrade (UB), Serbia
- NCSR «DEMOKRITOS» (NCSR), Greece

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You can follow us on the project website and social media:

 <http://opti-aromaq.cut.ac.cy/>  [Opti-AromaQ](#)