BioFarms Cluster – BFC

Interreg VI-B IPA Adriatic Ionian
Priority 1 - Supporting a smarter Adriatic - Ionian region
SO 1.1 - Strengthening innovation capacities in the Adriatic - Ionian region

Activity 1.2 - Knowledge transfer among partners

List of matrices for exploitation

08/01/2024

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List of matrix for exploitation

Main focus of BFC Project:

1. **Biodiversity**
   - Recovery and enhancement of native/endemic species, including those at risk of genetic erosion.

2. **Circular economy**
   - Recovery of agrifood by-products

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List of matrices for exploitation

Focus on Biodiversity

- ***Environmental Adaptation***: These plants are naturally adapted to local climatic, soil, and water conditions, making them more resilient and less dependent on external inputs such as irrigation or fertilizers.
- ***Biodiversity Conservation***: Promoting native and endemic plants helps preserve local biodiversity and counteracts genetic erosion, which can compromise ecosystem balance.
- ***Ecological Sustainability***: As an integral part of local ecosystems, these species better support pollinators, natural cycles, and local wildlife, contributing to ecological stability.
- ***Reduced Invasiveness***: Unlike introduced species, native and endemic plants pose a much lower risk of becoming invasive, maintaining the natural balance of the territory.
- ***Economic Opportunities***: Native and endemic plants can be utilized for unique and niche products, such as in the food, pharmaceutical, cosmetic, or artisanal sectors, offering a competitive advantage in local and international markets.

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List of matrices for exploitation

Focus on Biodiversity

- ***Development of the domestication process and cultivation cycle***: Possibility of integration into agricultural corporate production cycles and development of integrated supply chains

- ***Industrializing extraction processes:*** Development of integrated supply chains from cultivation to production and refinement of high-quality plant extracts

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List of matrices for exploitation

Focus on Circular economy

- ***Environmental sustainability:*** Using by-products reduces the amount of agricultural and food waste, contributing to a lower environmental impact and promoting recycling and the reuse of natural resources.
- ***Valorization of by-products:*** Agro-food waste can be transformed into valuable resources, such as plant extracts, reducing waste and improving the efficiency of production chains.
- ***Innovation and new markets***: The use of by-products for extracting active principles can drive the development of new products and applications, creating opportunities for new markets and businesses.
- ***Contribution to the circular economy:*** Promotes an economic model in which resources are reused, reducing dependence on virgin resources and improving the efficiency of production processes.
- ***Economic savings:*** Using by-products as raw material can reduce production costs, as already available resources are used, avoiding the purchase of expensive raw materials.

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List of matrices for exploitation

Focus on Circular economy

- ***Variable quality of waste:*** The quality of by-products can be inconsistent, affecting the effectiveness and quality of the extracted products, with potential negative impacts on the final products.

- ***Collection and management costs:*** The collection, management, and processing of by-products can incur additional costs, especially if they are not well-organized or require complex selection and preparation processes.

- ***Safety and contamination issues:*** Some by-products may undergo rapid spoilage and contamination processes that could compromise the quality and safety of the extracts, requiring rigorous purification and control processes

- ***Limited availability and seasonality:*** The availability of agri-food waste may be limited by the seasonality of agricultural production, making it difficult to ensure a constant supply of raw material for extraction processes.

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List of matrices for exploitation

Focus on Biodiversity – Potential Vegetable Matrices of Endemic and typical species of the Mediterranean maquis

Helichrysum italicum **- Italian strawflower, Immortelle**
Artemisia arborescens **- Tree wormwood**
Cistus monspeliensis **- Montpellier rockrose**
Foeniculum vulgare Mill. subsp. piperitum **- Wild fennel**
Humulus lupulus **- Wild hop**
Myrtus communis **- Myrtle**
Pistacia lentiscus **- Mastic tree**
Origanum vulgare subsp. Viridulum **– Wild Oregano**
Spartium junceum **- Spanish broom**
Thymus vulgaris **– Thyme**
Thymus mastichina **- Tree thyme, Mastic thyme**
Vitex agnus-castus **- Chaste tree**

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List of matrices for exploitation

Focus on Biodiversity – Potential Vegetable Matrices of Endemic and typical species of the Mediterranean maquis

Essential Oils

- ***Helichrysum italicum (Helichrysum)***
- ***Myrtus communis (Myrtle)***
- ***Pistacia lentiscus (Mastic)***
- ***Foeniculum vulgare (Wild Fennel)***
- ***Artemisia arborescens (Artemisia)***
- ***Humulus lupulus (Wild Hops)***
- ***Cistus monspeliensis (Cistus)***
- ***Thymus vulgaris (Thyme)***
- ***Origanum vulgare (Oregano)***
- ***Vitex agnus-castus - Chaste tree***

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List of matrices for exploitation

Focus on Biodiversity – Potential Vegetable Matrices of Endemic and typical species of the Mediterranean maquis

Flavonoids (quercetin, kaempferol, and rutin)

- ***Helichrysum italicum (Helichrysum)***
- ***Myrtus communis (Myrtle)***
- ***Pistacia lentiscus (Mastic)***
- ***Spartium junceum (Broom)***
- ***Foeniculum vulgare (Wild Fennel)***
- ***Artemisia arborescens (Artemisia)***
- ***Cistus monspeliensis (Cistus)***
- ***Thymus vulgaris (Thyme)***
- ***Origanum vulgare (Oregano)***
- ***Vitex agnus-castus - Chaste tree***

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List of matrices for exploitation

Focus on Biodiversity – Potential Vegetable Matrices of Endemic and typical species of the Mediterranean maquis

Phenolic Acids (gallic acid, caffeic acid, and ellagic acid)

- ***Myrtus communis (Myrtle)***
- ***Pistacia lentiscus (Mastic)***
- ***Foeniculum vulgare (Wild Fennel)***
- ***Cistus monspeliensis (Cistus)***
- ***Thymus vulgaris (Thyme)***
- ***Origanum vulgare (Oregano)***

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Focus on Biodiversity – Potential Vegetable Matrices of Endemic and typical species of the Mediterranean maquis

Terpenes (humulene, β-caryophyllene, myrcene…)

- ***Pistacia lentiscus (Mastic)***
- ***Humulus lupulus (Wild Hops)***
- ***Cistus monspeliensis (Cistus)***
- ***Thymus vulgaris (Thyme)***
- ***Origanum vulgare (Oregano)***

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Focus on Biodiversity – Potential Vegetable Matrices of Endemic and typical species of the Mediterranean maquis

Sesquiterpenes (italidione and curcumene)

- ***Helichrysum italicum (Helichrysum)***
- ***Artemisia arborescens (Artemisia)***

Tannins

- ***Myrtus communis (Myrtle)***
- ***Cistus monspeliensis (Cistus)***
- ***Thymus vulgaris (Thyme)***
- ***Origanum vulgare (Oregano)***

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List of matrices for exploitation

Focus on Biodiversity – Potential Vegetable Matrices of Endemic and typical species of the Mediterranean maquis

Alkaloids and Saponins (spartine)

- ***Spartium junceum (Broom)***

Isoflavones, Alpha and Beta Acids

- ***Humulus lupulus (Wild Hops)***

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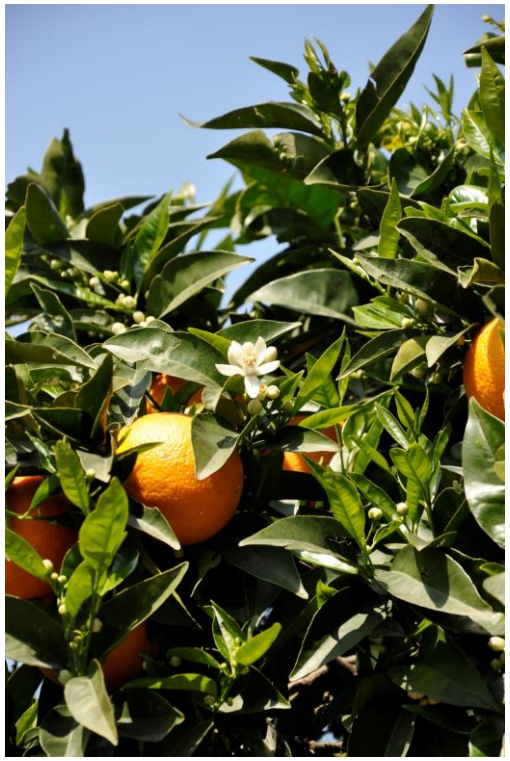
List of matrices for exploitation

Focus on Circular economy – Local agrifood by-products in Calabria (Italy)

- Grapevine - *Vitis vinifera*
  - Grape pomace and seeds
  - Grape leaves
- Olive tree – *Olea europea*
  - Olive leaves
- Citrus fruits (Orange, Bergamot, Clementine, Mandarin)
  - Citrus leaves
  - Citrus pomace
- Tomato and Chili pepper
  - Tomato and Chili pepper seed and skin



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List of matrices for exploitation

Focus on Circular economy – Local agrifood by-products in Calabria (Italy)

Main phytocomplexes

- **Polyphenols (Grape pomace, seeds, and leaves; Olive leaves; Citrus fruits and leaves; Tomato and Chili pepper seed and skin)**
- **Flavonoids (Grape pomace, seeds, and leaves; Olive leaves; Citrus fruits and leaves; Tomato and Chili pepper seed and skin)**
- **Terpenes (Grape pomace and seeds; Olive leaves; Citrus fruits and leaves; Tomato and Chili pepper seed and skin)**
- **Tannins (Grape pomace, seeds, and leaves; Olive leaves; Citrus fruits (peel); Tomato and Chili pepper seed and skin)**
- **Phenolic Acids (Grape pomace, seeds, and leaves; Olive leaves; Citrus fruits and leaves; Tomato and Chili pepper seed and skin)**
- **Carotenoids (Citrus fruits; Tomato and Chili pepper seed and skin)**
- **Alkaloids (Olive leaves; Tomato and Chili pepper seed and skin)**
- **Fatty Acids (Grape pomace and seeds; Olive leaves)**

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List of matrices for exploitation

Focus on Biodiversity and Circular economy – Potential objectives of pilot activities

- **Identification of the most suitable wild species for propagation and cultivation to develop a local and transnational supply chain.**
- **Identification of the most effective processing/extraction/post-processing method and scale-up testing for the selected matrices.**
- **Assessment of the actual market potential for plant extracts and their derivatives from the selected species.**
- **Identification of potential stakeholders in each national node.**

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List of matrices for exploitation

Focus on Biodiversity and Circular economy – Potential main issues to be verified.

- **Analysis of the effects of domestication and cultivation processes on the qualitative and quantitative yield of active compounds compared to the original wild species.**
- **Identification of critical issues in the development of integrated supply chains for the production of plant extracts from domesticated wild plants and by-products of agri-food supply chains (Issues related to the primary processing and logistics of plant materials post-harvest).**
- **Limits and/or legislative restrictions on the use of certain species and/Identification of the most suitable wild species for propagation and cultivation to develop a local and transnational supply chain.**

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Thank you

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