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OLEAF4VALUE, SUSTAINABLE TAILOR-MADE AND MARKET-READY SOLUTIONS SUCCEED AT OLIVE LEAF BIOMASS VALORIZATION

Crafting five processing routes for the smart biorefinery to yield over 40 bioproducts from olive leaves.

Figure 1: Innovative experiments are carried out on olive leaf biomass to ensure market-ready solutions.

Madrid, Spain – May 2024 – The OLEAF4VALUE project, a sustainable-oriented EU-funded initiative formed by a consortium of 16 expert partners that aimed at switching the way we think about olive leaves, has developed **biomass valorisation strategies to solve the problem of olive leaves removal from the fields after 3 years of work**. It has achieved significant milestones since its beginning back in July 2021 across various fronts:

1. Partners provided diverse samples and experiences, leading to **a comprehensive methodology for rapid biomass scanning**, validated for future biorefinery operations.
2. **Five processing routes for the smart biorefinery** have been designed to produce **over 40 bioproducts from olive leaves**, with sorting software near completion to optimize usage based on market demands and sustainability.
3. Partners have developed **biotechnological processes** based on **enzymes and microorganisms**, have **improved physicochemical properties**, and have implemented **a disruptive technology called MIPs** (Molecularly Imprinted Polymers - Affinisep) to produce extracts with **higher purity** in terms of the active ingredient of interest.
4. Olive leaf bioproducts, rich in polyphenols and triterpenes, have shown promising results as **antioxidants** and **antimicrobials**. **Polyphenol-rich extracts** can beneficially modulate **human gut**

microbiota, and **oleanolic acid-taurine** can be possibly used as substance for **cosmetics applications**. Additionally, adding olive leaf extracts to the **diet of Atlantic salmon** has significantly shown improvement in fish farming sustainability by **boosting disease resilience.**

5. SAMBIO (Smart Dynamic Multi-Valorisation-Route Biorefinery)'s modelling assessed valorisation route feasibility, emphasizing **energy optimization for reduced environmental impact**, while social analysis highlighted **safety and consumer awareness** as key for responsible consumption.

The proper management of by-products minimizes environmental impact by avoiding waste accumulation and pollution. The conservation of olive leaves in the field can lead to pest problems, among others. However, transportation is a logistical problem for the farmer and, on many occasions, burning these residues is the most efficient way, with the problems of soil degradation and atmospheric pollution that this can cause.

Therefore, giving a second life to these leaves minimizes the impact on crop productivity, in addition to the health of soil, water and air in agricultural areas, without entailing an economic loss for producers, since the added value of this raw material would also fall, to a large extent, directly on the primary producer. This comprises the goal of OLEAF4VALUE and the results mentioned above show successful advancements for the primary sector.

"The OLEAF4VALUE dream team has made a huge step forward in the valorization of an underexploited biomass such as the olive leaf, while developing a new innovative concept of dynamic biorefinery, that can serve as an inspiration to other industries. Natac has had the privilege and proudness of coordinating this project whose future industrial deployment will have a definite impact en the whole value chain and in the rural areas where biomass is principally located." Affirms Jose María Pinilla, Head of Projects at Natac, OLEAF4VALUE Project Coordinator.

In conclusion, OLEAF4VALUE's comprehensive efforts in characterizing olive leaf biomass have proven with preliminary findings to underscore the feasibility and sustainability of adopting cleaner biorefinery processes, showcasing the potential of olive leaf biomass in fostering innovative and eco-friendly solutions.

For more information about the OLEAF4VALUE project and its outcomes, please visit the website https://oleaf4value.eu/ or contact **Salomé Robbert (OLEAF4VALUE project coordinator)** srobbert@natacgroup.com and **Andrea León (OLEAF4VALUE Dissemination and Communication)** andrea.leon@innovarum.es

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