Challenge

The European agricultural sector heavily depends on protein imports to fulfill the protein requirements of aquaculture, livestock, and human consumption. The Mediterranean region, specifically, faces additional challenges due to shortage of water and ecological imbalances, exacerbating the insufficiency of traditional protein supply chains.

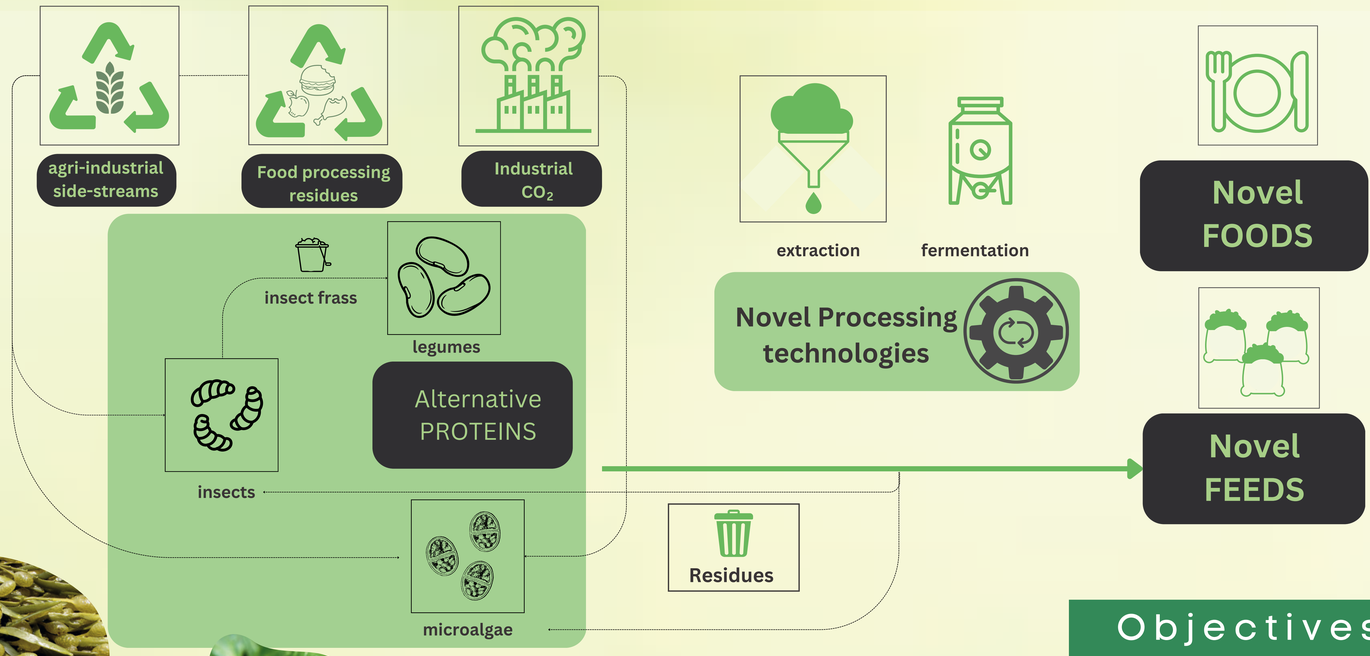
There is a strong demand to develop effective and environmentally sustainable sources of locally produced alternative proteins.

Solution

CIPROMED aims to unlock the nutritional treasure that exists in the agricultural waste.

A huge volume of livestock and crop residues, alongside various by-products, is produced by agricultural farming systems. It is estimated that 27% of global agricultural production which is equivalent to 1.6 billion tons valued at $750 billion, is lost annually.

Through the CIPROMED project, an integrated approach will be adopted to extract proteins from agri-industrial by products like brewer's spent grain and oilseed presscakes, as well as from insects, microalgae, and legume biomass. Additionally, fermentative sources will be employed to enhance the availability of alternative proteins and accelerate the potential for a widely adoption of new protein sources.



Outcomes & Impact

CIPROMED aims to reduce the dependency of the Mediterranean countries on imported protein sources and will help the participating countries to rely more on locally produced nutrient sources.

CIPROMED aims to adjust novel protein production to the unique Mediterranean conditions, creating a new, socio-economically feasible and environmentally sustainable alternative protein value chain and production system located in Mediterranean countries.

CIPROMED will elicit consumer perceptions/preferences around the new types of foods and feeds in the Mediterranean Region, considering also the unique religious and cultural characteristics and demographic differences of each participating country.

In contrast to conventional agriculture, the production of the most common commercially reared insect and heterotrophic microalgae species on by-product feeds is characterised by considerably low GHG emissions (30-50% lower), having, therefore, a lower environmental impact and contribution to global warming.

CIPROMED will focus on the improvement of human health by designing and evaluating alternative proteins-based diets that will target metabolic and immune systems and promote human health.

Mediterranean countries will have to switch to farming systems with more efficient use of natural resources.

CIPROMED

CIRCULAR AND INCLUSIVE UTILISATION OF ALTERNATIVE PROTEINS IN THE MEDITERRANEAN VALUE CHAINS

Objectives

Create protocols for the production of new protein value chains using high protein agricultural crops, insects [Black soldier fly (BSF, *Hermetia illucens*), Fruit fly (FF, *Ceratitis capitata*) and yellow mealworm (YM, *Tenebrio molitor*)], microalgae, and agri-industrial side-streams.

Evaluate protocols for insect rearing and cultivation of heterotrophic microalgae (*Galdieria sulphuraria*) on side-streams to generate protein-rich biomass.

Optimize the conditions for outdoor mass production of autotrophic microalgae (*Chlorella* sp.) biomass with high protein content using flue gas from a power plant as a Co source.

Develop advanced extraction, stabilization, and technological conversion methods to obtain protein ingredients for various food and feed applications.

Integrate protein extraction residues in insect rearing and microalgae

Characterize the sensory, nutritional, technological, functional, and safety aspects, as well as anti-nutritive factors, of the protein ingredients.

Formulate and evaluate new food and feed products containing the new protein ingredients.

Assess the environmental impact and economic implications of the new products and technologies.

Understand public perceptions and beliefs regarding the novel protein production.

Update the existing EU regulation framework on the use of novel proteins (Novel Foods).

Consortium

The CIPROMED consortium consists of 17 members and fulfills the multi-actor and multidisciplinary approach, as it includes 8 RTOs (UTH, UNIBO, UNITO, UGOE, DIL, CNR, IIT, ILU), 8 SMEs (AE, NP, SPAROS, FS, ABT, TALOS, SB, ELVIZ), and one NGO (GDI) across 7 European (Greece, Germany, Italy, Spain, Portugal, Cyprus, Malta) and 3 non-European countries (Tunisia, Israel, Morocco).

Funded by the European Union

PRIMA PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE MEDITERRANEAN AREA

This project is part of the PRIMA programme supported by the European Union

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