



2-3.12.2024

Rome

EU FOOD SAFETY FORUM

Supporting the Food Safety Systems
of the future

2-3.12.2024

Rome



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Circular and Inclusive utilisation of alternative PROteins in the MEDiterranean value chains

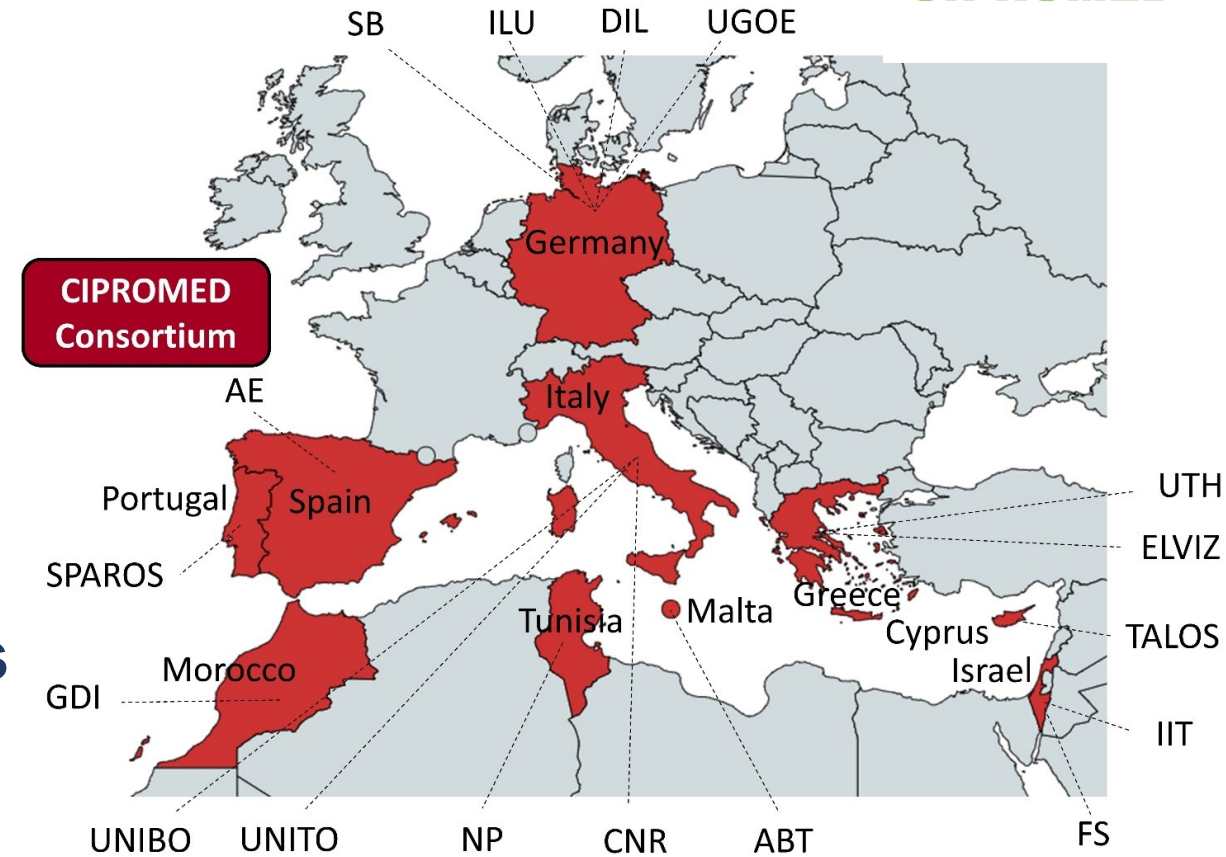
Rumbos Christos



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- ▣ Funding agent: **PRIMA Section 1**
- ▣ Starting date: **1 May 2023**
- ▣ End date: **30 April 2026**
- ▣ Coordinator: **Athanassiou Christos**
- ▣ Consortium: **17 partners**



10 countries [8 RTOs, 8 SMEs & 1 NGO]

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UNIVERSITY OF THESSALY



ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA



UNIVERSITÀ DEGLI STUDI DI TORINO



German Institute of Food Technologies



The problem

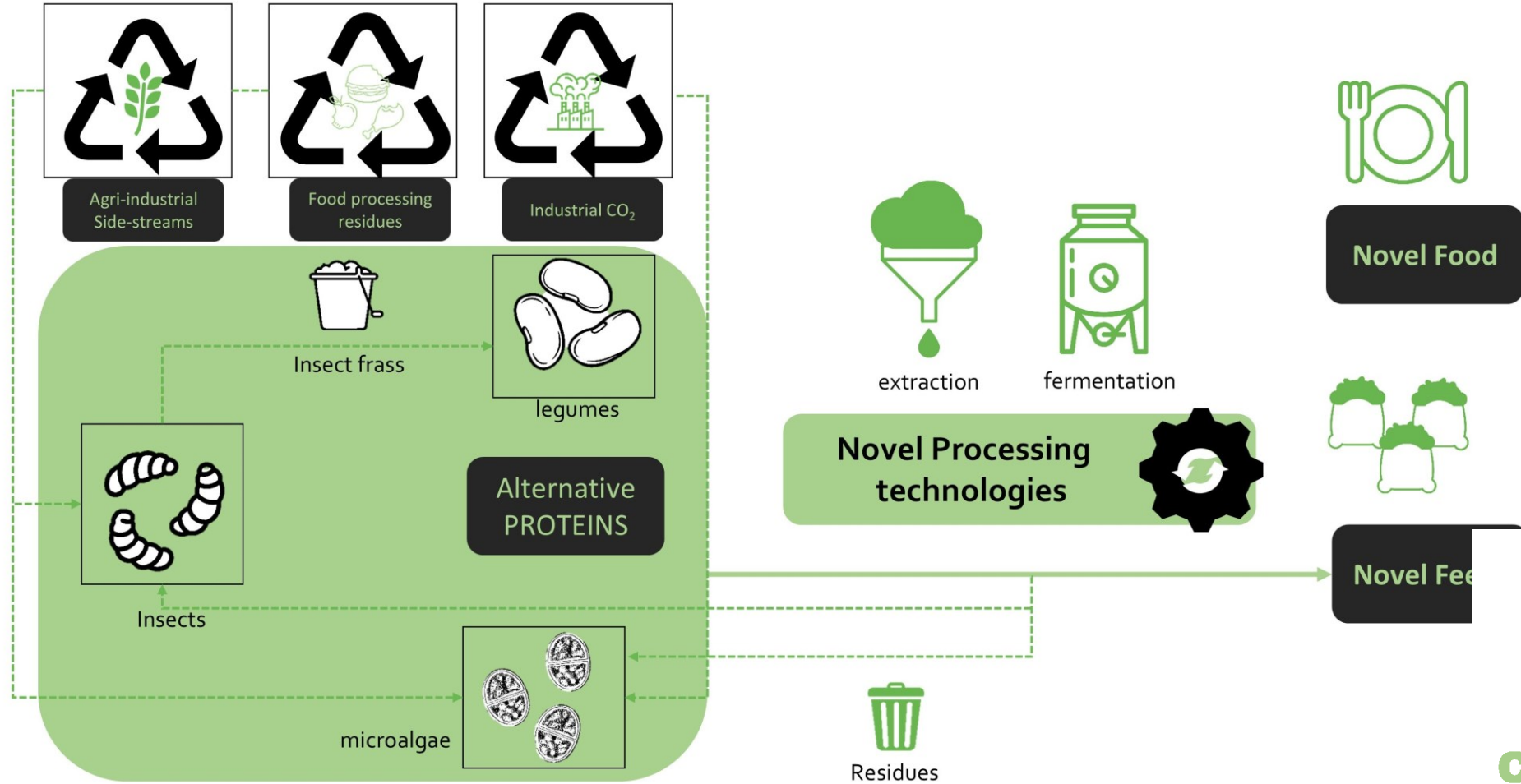


The solution

- Current European **agricultural production systems are heavily dependent on protein imports** to cover the nutritional needs of aquaculture and livestock production, but also for human consumption.
- Need for efficient, viable and locally produced **alternative protein sources!**



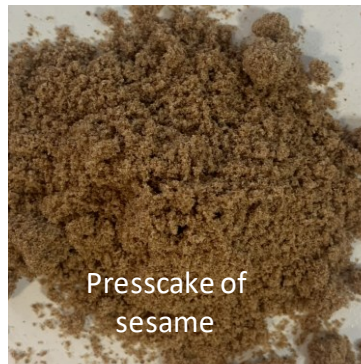
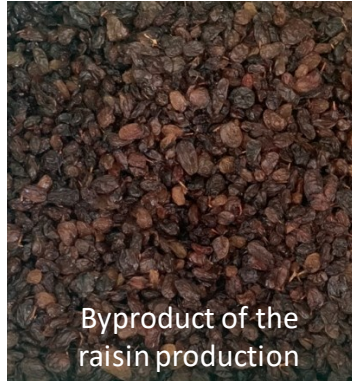
to **increase the stability and resilience** of Mediterranean agri-food production systems through direct exploitation of locally produced traditional crops, as well as by valorising the proteins from **locally generated agri-industrial side-streams**, and the upcycling and **bioconversion** of their extraction residues to protein produced by **insects, legumes, microalgae and fermentation products**



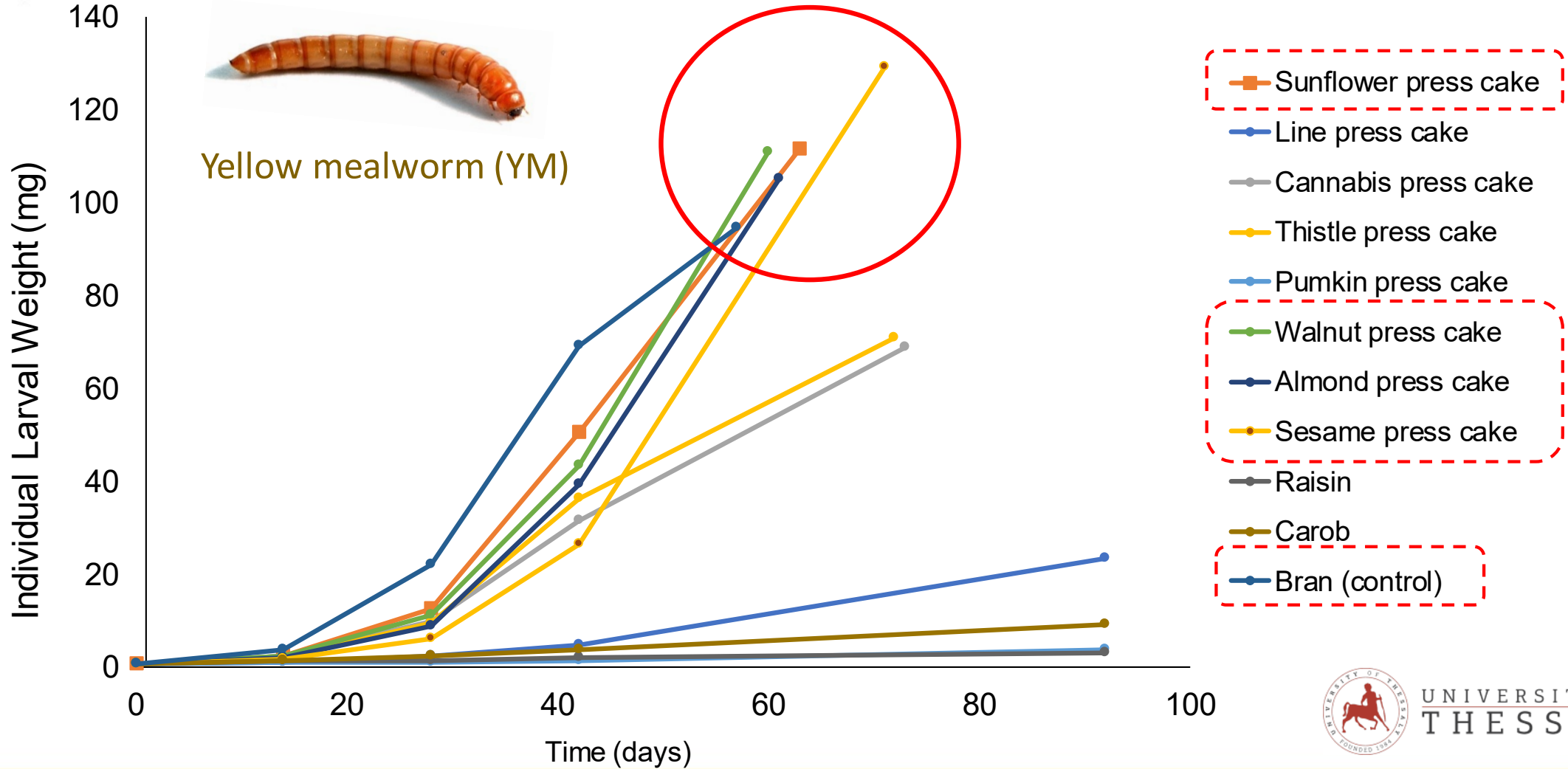
- Extract **high-quality protein ingredients for food and feed** from agri-industrial residues, insects, legumes, and microalgae using sustainable processes
- **Formulate** and validate **new prototypes of food and feed products** using advanced processing technologies
- Conduct **feeding trials with livestock and fish** to evaluate the effects of new protein ingredients

- Conduct **human clinical trials** to assess the impact of foods containing novel proteins on health and safety
- Demonstrate the **safety, regulatory compliance, and sustainability of processes and products**
- Investigate **psychological, cognitive, and emotional attitudes** and responses towards new food
- Develop a **business model and exploitation plans**

Side-streams as insect feedstocks



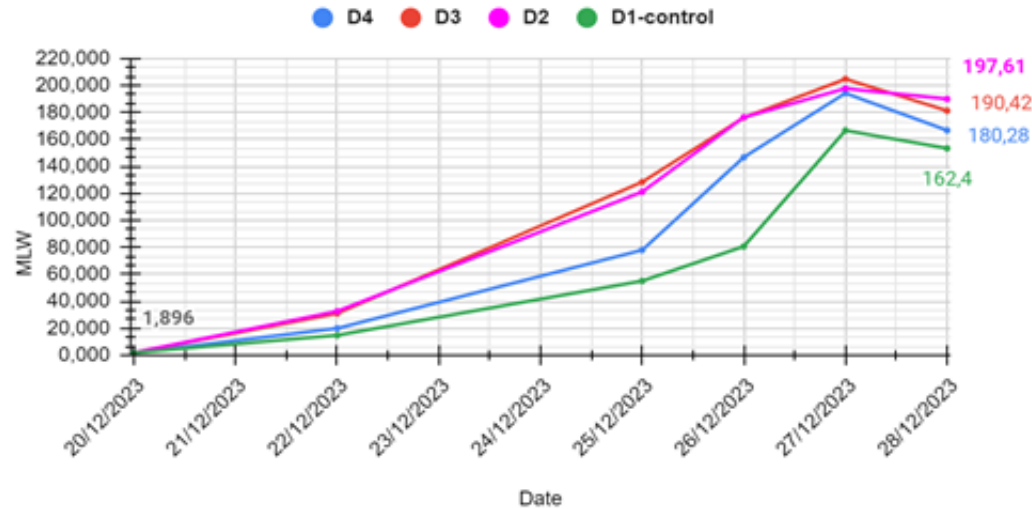
Side-streams as insect feedstocks



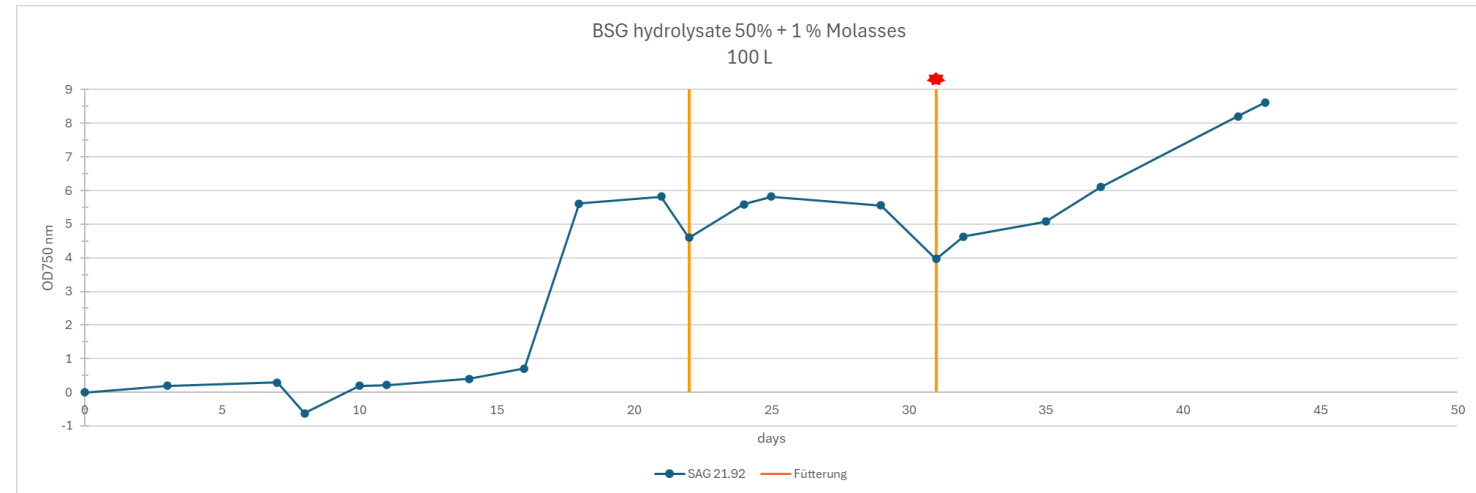
Side-streams as insect feedstocks

Ingredients	D1	D2	D3	D4	D5
Brewery Spent Grains	19,51	21,44	21,13	21,03	21,57
Brewery Spent Yeast	0	2,54	0	6,07	0
Potato Agribusiness waste	59,46	67,65	61,92	58,23	61
Cereal milling waste	2,65	6,75	7	9,41	7,6
Fruits	5,56	1,8	5,54	6,15	6,27
Vegetable mix	6,24	0	0	5,54	5,54
Protein DM	12,3	18,10	17,9	19,1	17,76
Carbohydrates DM	37,83	47,9	45,7	41,4	42,54

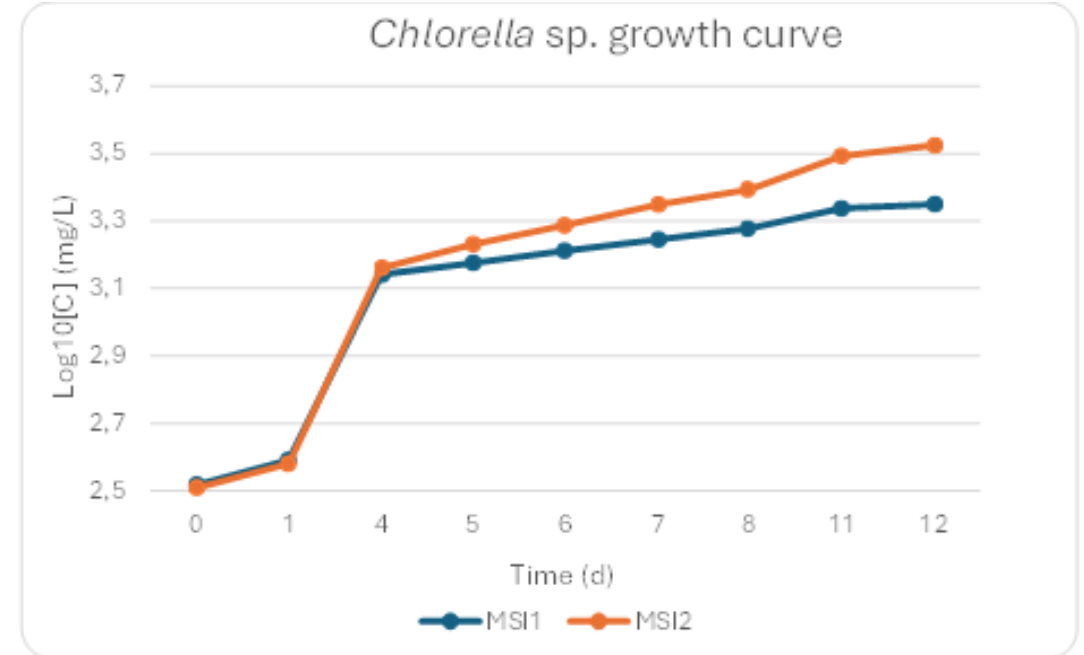
Larval weight evolution



Heterotrophic cultivation of *Galdieria sulphuraria*



Phototrophic cultivation of *Chlorella* sp.



Legumes cultivation with insect frass as soil fertiliser



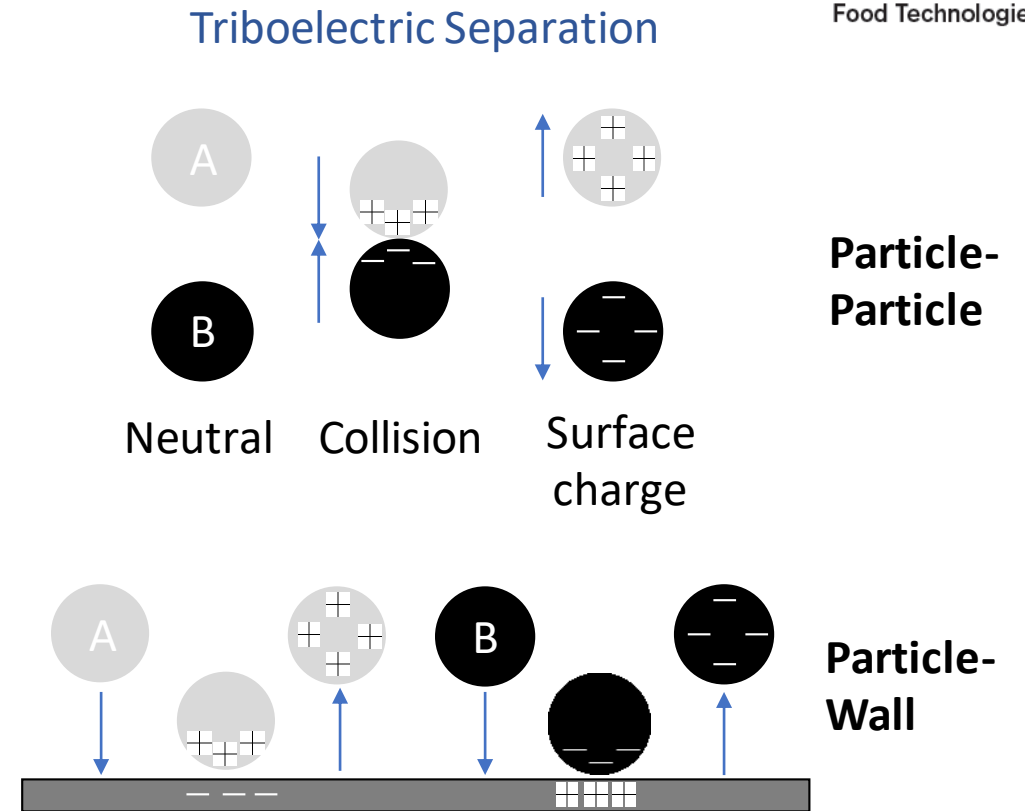
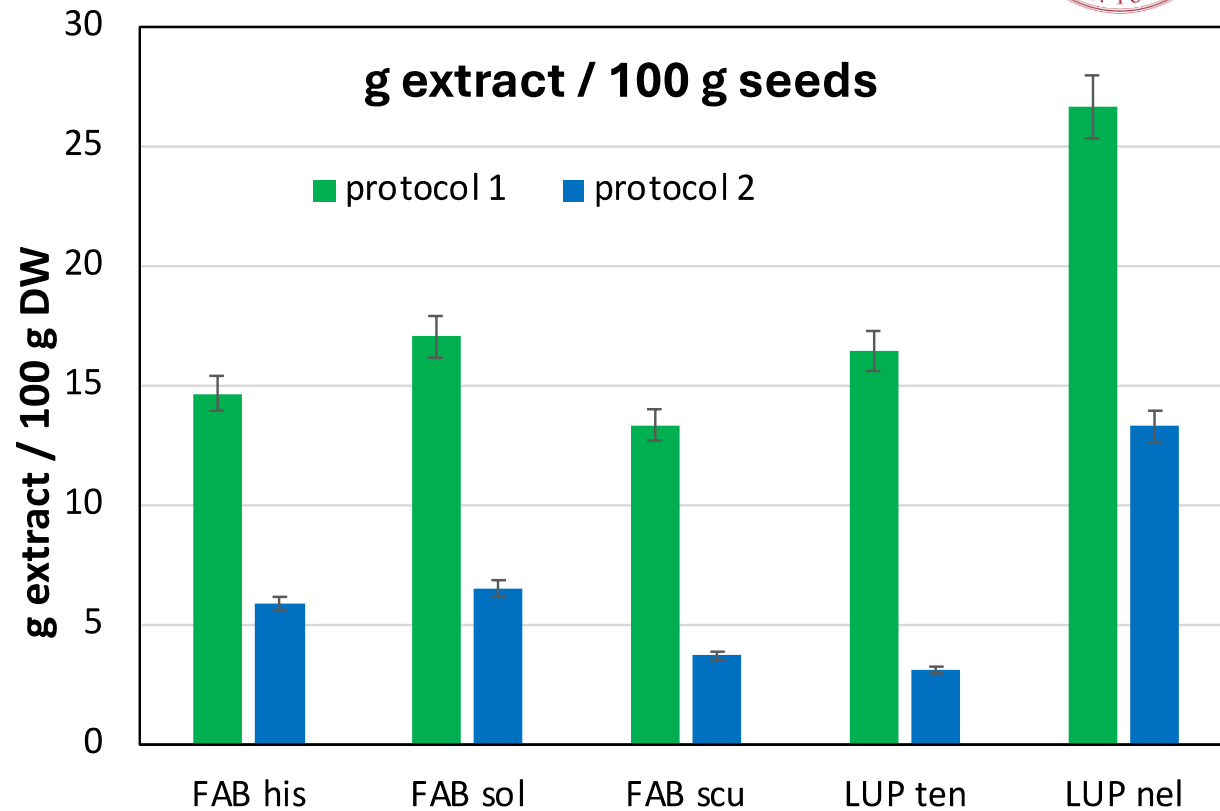
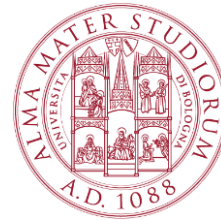
Pot experiments with lupins in UTH

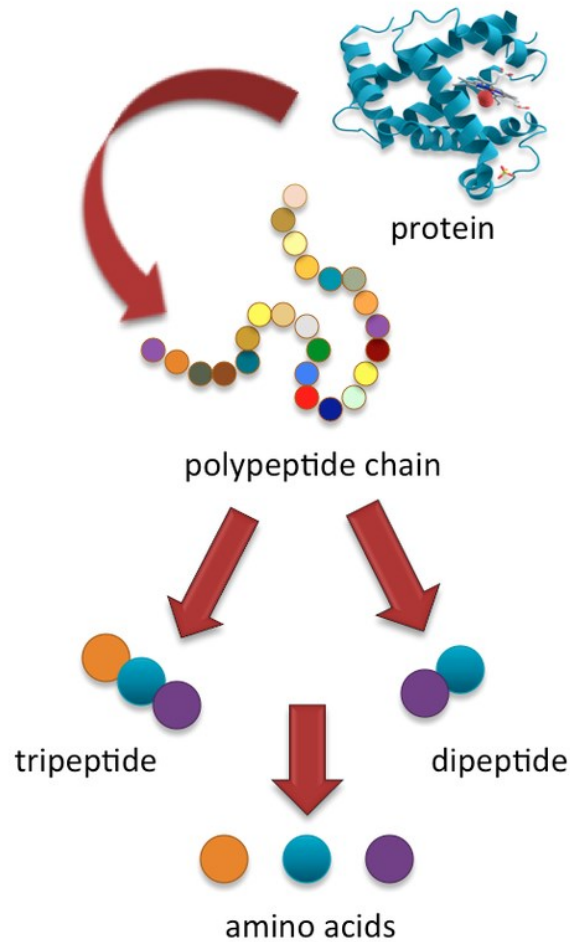


Field trial with fava beans in GDI

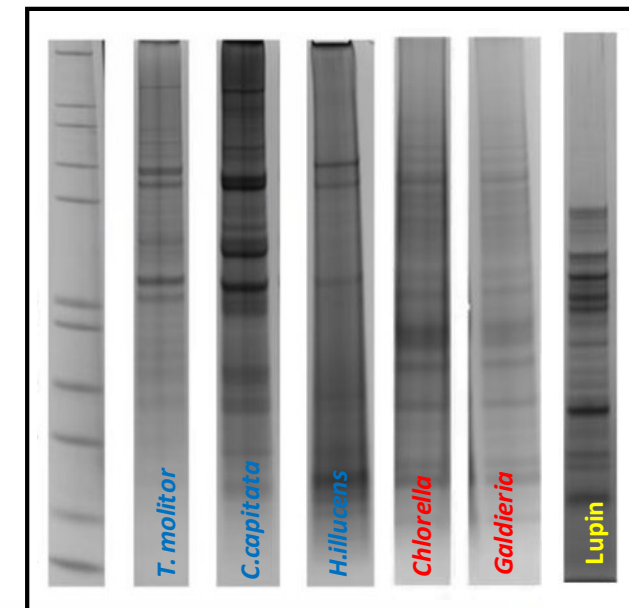
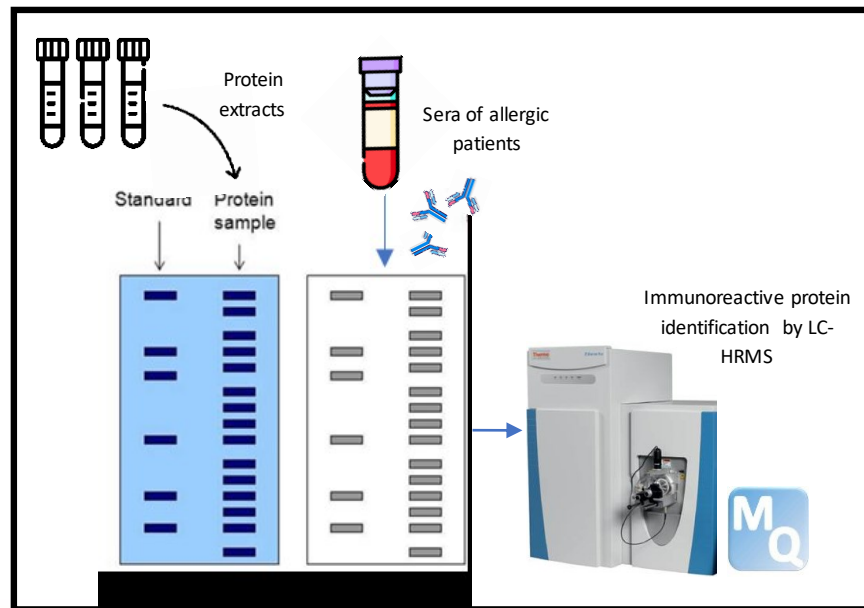


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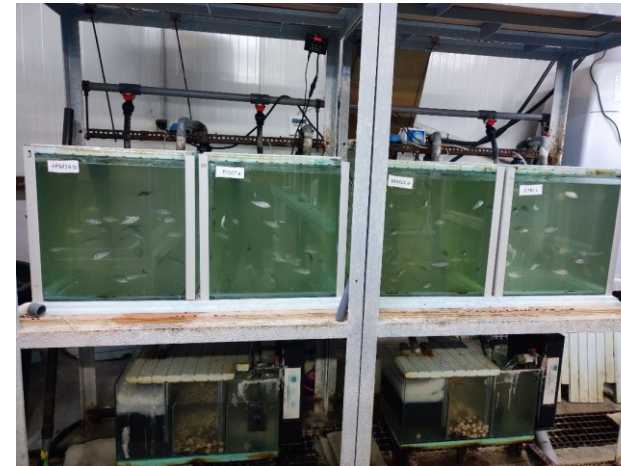
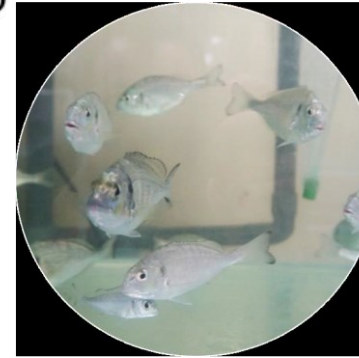




Allergenicity





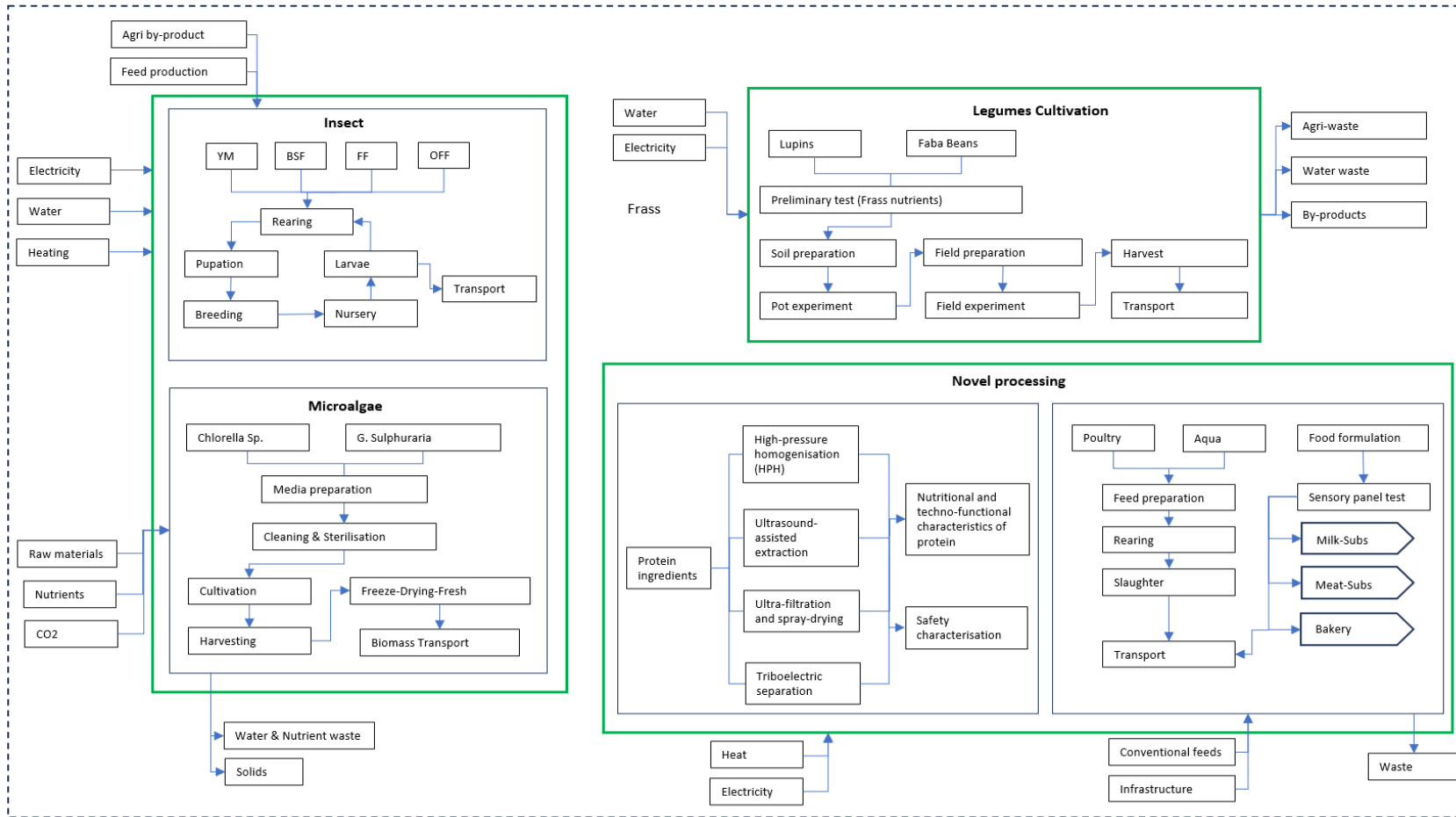


Poultry feeding trials



Fish feeding trials





- ✓ identification of environmental, economic and social impacts of the novel farming systems



THANK TO ALL

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