ZELDA

Zero-waste Lignocellulose-Derived biorefinery products for smArt plant protection

HORIZON-JU-CBE-2024-RIA-03

48 months, starting in September 2025

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CESAM
CENTRE FOR ENVIRONMENTAL AND MARINE STUDIES

dbio
universidade de aveiro
departamento de biologia

Partners

ZELDA: Zero-waste Lignocellulose-Derived biorefinery products for smArt plant protection

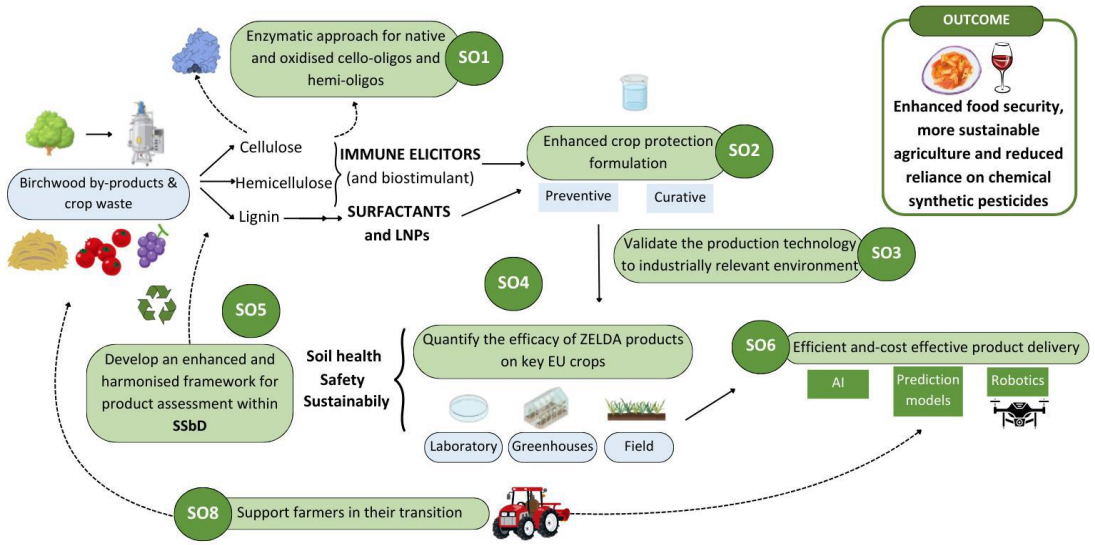
List of participants

#	Participant organisation name	Short name	Type	Country
1 *	Université Libre de Bruxelles	ULB	UNI	BE
2	Università degli Studi di Modena e Reggio Emilia	UNIMORE	UNI	IT
3	Bio-Base Europe Pilot Plant VZW	BBEPP	SME	BE
4	Eurofins Agroscience Services Regulatory	EAS	IND	DE
5	Universitaet Graz	UGRAZ	UNI	AT
6	Centro de Investigaciones Cientificas y Tecnólogicas de Extremadura	CICYTEX	RTO	ES
7	Consorzio Italbiotec	ITB	CLU	IT
8	Aermatica3D srl	A3D	SME	IT
9	FVA di Louis Ferrini & C	FVA	SME	IT
10	Timac Agro Dungemittelproduktions Und Handels Gmbh	TIMAC AGRO	IND	AT
11	Centro de Investigaciones Energéticas Medioambientales y Tecnológicas	CIEMAT	RTO	ES
12	Kineton s.r.l – società benefit	KINETON	IND	IT
13	Universidade de Aveiro	UAVEIRO	UNI	PT

* = coordinator; **UNI**: University; **SME**: Small and Medium Enterprises; **IND**: Industry; **RTO**: Research and technology organisation; **CLU**: cluster

Total Funding: 5,012,905 €

Summary



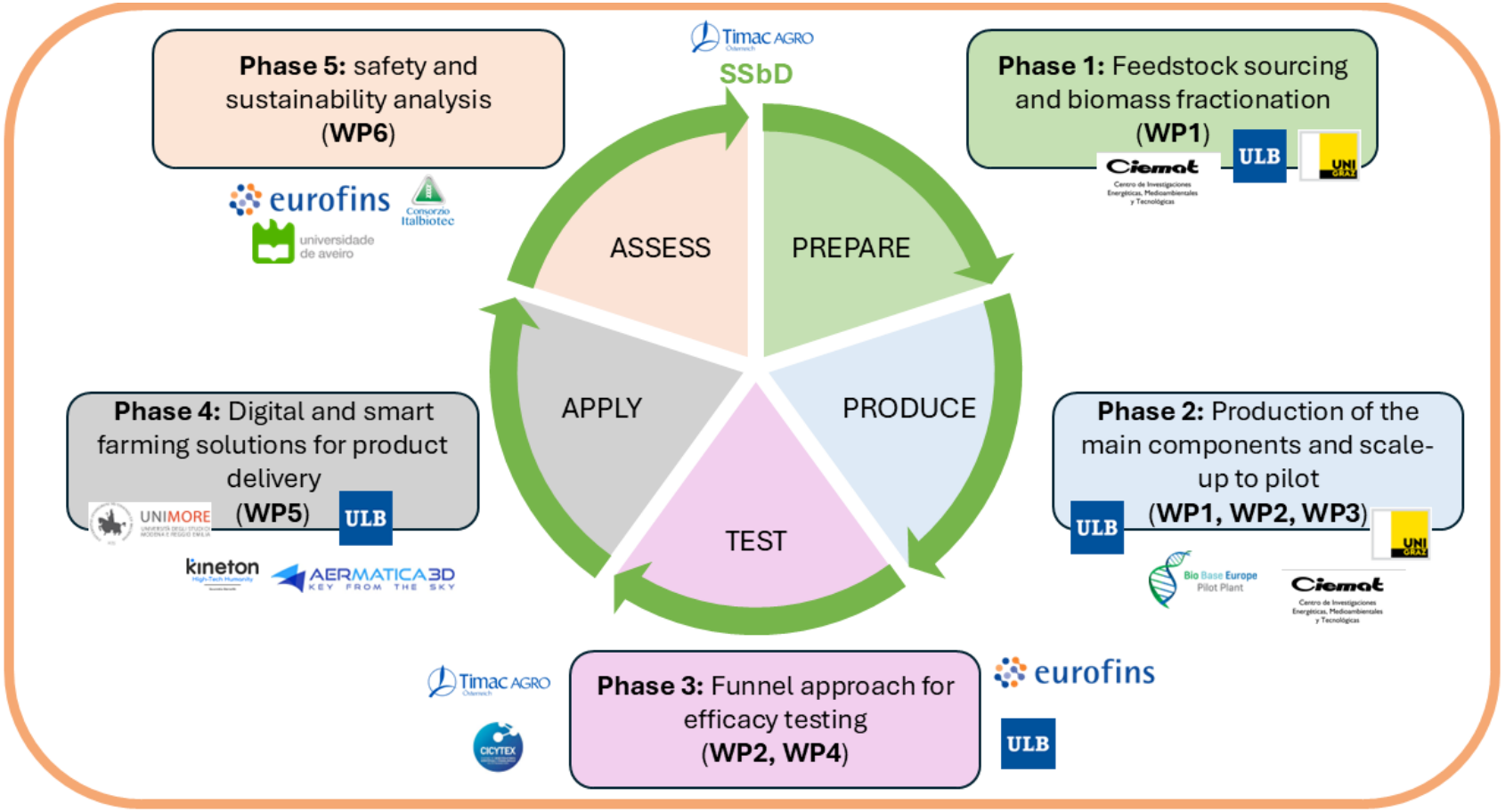
•**Sustainable Crop Protection:** ZELDA aims to develop greener, bio-based alternatives to conventional pesticides, reducing environmental impact and pesticide resistance.

•**Zero-Waste Biorefinery:** The project validates a TRL5 biorefinery approach to create broad-spectrum immune elicitors from lignocellulosic biomasses, enhancing natural plant defences.

•**Innovative Nanotechnology & AI:** Lignin nanoparticles offer microbicidal effects, while AI-based smart delivery systems ensure precise and efficient application.

•**Food Security & Biodiversity:** The project tests its solutions on key EU crops (cereals, tomatoes, grapes) across diverse climates, promoting sustainable agriculture and ecosystem preservation.

Our role @UAveiro applEE CESAM within SSbD



Evaluation insights (15/15)

Criterion 1 – Excellence (5/5)

- **Ambitious & Innovative Approach**: The project aims to develop fully bio-based pesticide alternatives, advancing multiple technologies from TRL 2/3 to TRL 4-6, surpassing the current state of the art.
- **Robust Methodology**: A sound, interdisciplinary approach ensures effective development of plant immune elicitors, though the microbiocidal activity assumption needs further validation.
- **Sustainability & Stakeholder Engagement**: The project aligns with feedstock sustainability principles, involves farmers in collaborative activities, and includes training for stakeholders.
- **Advanced AI & Tech Integration**: AI-driven image processing enhances precision in pesticide application, ensuring efficiency and economic viability through techno-economic assessments.

Evaluation insights (15/15)

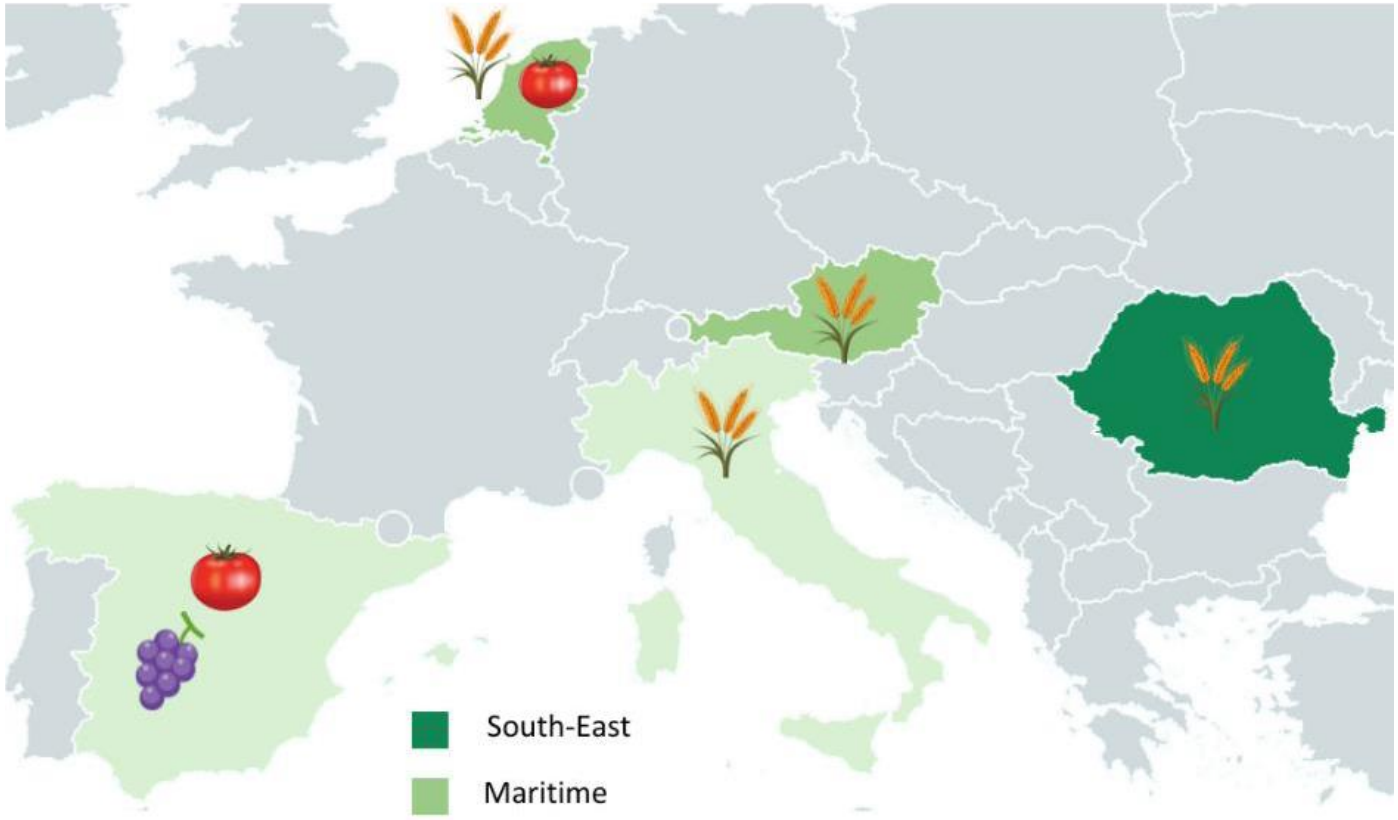
Criterion 2 – Impact (5/5)

- **Strong Impact on Sustainable Agriculture:** The project effectively addresses key outcomes, including reducing reliance on hazardous pesticides and promoting sustainable crop protection.
- **Enhanced Food Security & Environmental Protection:** By minimizing pesticide impact on human health, ecosystems, and water sources, the project contributes to safer and more resilient food production.
- **Comprehensive Dissemination & Communication:** A well-structured plan ensures effective outreach to target audiences, maximizing the project's impact and adoption.
- **Robust IPR & Exploitation Strategy:** A credible intellectual property management approach supports the long-term use and commercialization of project results.

Case studies

@UAveiro

- SSbD: feedback loop intended to refine the products, processes, and technologies.
- Soil health analysis
- Safety and hazard assessment
- Link with LCA



Evaluation insights (15/15)

Criterion 3 - Quality and efficiency of the implementation (5/5)

- **Clear & Effective Work Plan:** The project's eight work packages are well-structured, with clear interconnections, high-quality deliverables, and relevant milestones.
- **Risk Management & Assessment Focus:** Identified risks have well-defined mitigation strategies, with strong emphasis on life cycle and techno-economic assessments to ensure industry adoption.
- **Appropriate Resource Allocation:** The effort and resources assigned to work packages are well-justified, ensuring efficient execution of project activities.
- **Strong & Complementary Consortium:** The consortium members bring relevant technical, managerial, and business expertise, with an Advisory Board that supports project objectives.

Two winning teams from the UAveiro…

- **FABULOSE** (PI @Uaveiro Isabel Lopes)

15/15 evaluation CBE-JU- Circular Bio-based Europe Joint Undertaking

Bio-based non-animal leader

Both ZELDA and FABULOSE…

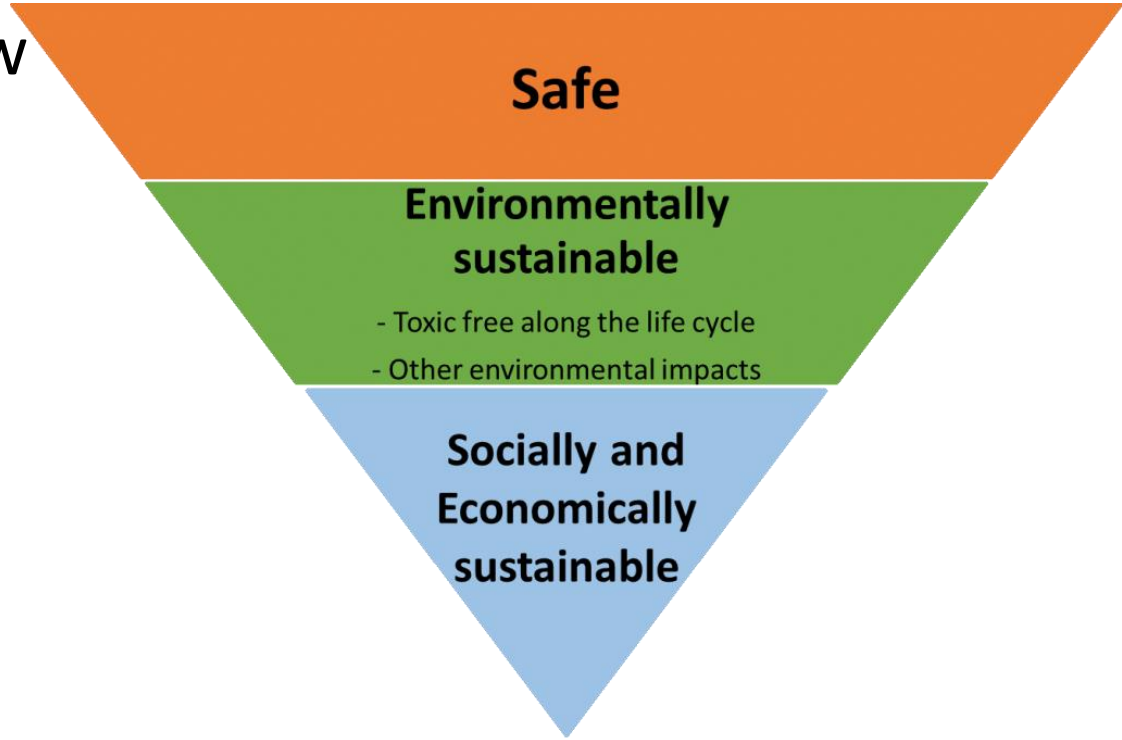
New consortia

ZELDA & FABULOSE

- Strong skills in Hazard Assessment; good track record from participation in EU consortia (ZELDA→ IP without any prior knowledge about main partners)
- Consulting Companies are in from the beginning;
- Management and guidance;
- Different approaches: payment during project writing + success fee (all partners or coordinator +coordinator and partners); pay success fee by all partners if succeeded
- Crucial information: understand finances involved in contracting Consulting Companies regarding academia partners or public entities.

Added value

- Participate and extend skills and knowhow on SSbD in agriculture;
- Link to PARC: Partnership for the Assessment of Risks from Chemicals
- New industry and PME contacts
- Provide insight on soil safety and how it improves productivity



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