This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

SustAInable

FROM CROPS TO TABLE

CLOSING MEETING

PALERMO

22-23 May, 2025

ITALY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Partner presentation

EKROME
SUSTAINABLE ECONOMY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

EKROME

- EKROME, which was founded in Rome (Italy) in 2018 stands for «Environment Framework for Circular Economy in Rome»
- Our ambitious mission is to digitalize all the processes connected to the re-use and recycling chains all over the World.
- We started developing software for third parties to solve issues related to waste collection, transportation, storage and recycling, based on a proprietary B2B platform.
- We allow each link in the waste management chain to track the waste pathway towards a new product.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

EKROME SustAInable TEAM

Giuseppe Falvo D'Urso Labate (ER) *Research leader*		Nuclear Engineer, PhD, Certified Environment Manager – circular economy, process engineering, product placement
Katarzyna Kolacz (ER)		MSc in Foreign Languages – international networking, economic models, supply chains
Evelina Micono (ER)		MSc in Architecture – circular economy, energy efficiency, sustainable buildings, process management

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Katarzyna Kolacz - Project Activity Contribution - RP2 – at ***UGR***

Research topics:

- Adoption barriers for Agriculture 4.0 practices in Spanish smallholder contexts, with comparative analysis of business models. (WP4 – T4.1; WP6 – T6.3)
- Economic assessment of biofertilizer-enhanced production chains (together with Vassilev N. and Vassileva M.) to test bioinput integration from market perspectives. (WP4 – T4.3; WP6 – T6.1)

On the basis of the research done, I developed:

- A revised business model canvas tailored to DSS-driven agriculture using bio-based inputs in Spanish pilot environments.

Business Model Sketch

Key Partners	Key Activities	Key Resources	Value Proposition	Customer Relationships	Customer Segments	Revenue Streams
• UGR (biofertilizer & agbio observation) • Ekrome (DSS integrator) • EU programs for agricultural innovation	• DSS & AI R&D • Biofertilizer integration with DSS	• DSS software & developers • Biofertilizer agents	• **Decision Support System** optimizes Irrigation and fertilization using biofertilizer, agro–climate observation, and edge AI • Incorporated of *yardlyal* quality increases; yield increases, Improved soil health, socio-economic	• Technical support & feld-based training • Community-based support infrastructure	• Small and agriculture cooperatives • Organic farms • Rural communities in low-digitat areas • Fruit and vegetiable producer organization	• Low-cost DSS sales • Bundled backages (biofertilizer, powered pumps, & truncial funds)
						Cost Structure • R&D for DSS & AI updates • Biofertilizer integration • Technical sup-port
				Cost Structure • R&D for DSS & AI updates • Biofertilizer integration • Maintenance & field demonstration		

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

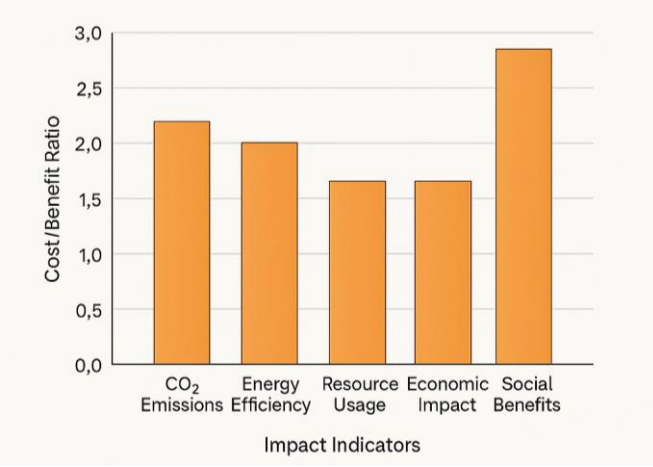
Katarzyna Kolacz - Project Activity Contribution - RP2 – at ***ISI***

Research topics:

- Comparative cost-efficiency analysis of traditional versus sensor-augmented precision farming methods in pilots. (WP5 – T5.3; WP6 – T6.1)

On the basis of the research done, I developed:

- A dashboard of economic impact indicators linked to DSS usage in fruit and vegetable production.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Evelina Micono - Project Activity Contribution RP2 – at ***ISI***

Research topics:

- Sensory and chemical analysis of products (olive oil, fruits, vegetables). (WP5 – T5.2; WP5 – T5.4)
- Definition optimal irrigation and fertilization patterns based on soil and plant parameters. (WP4 – T4.2; WP5 – T5.1)
- Specification of plant and product quality indicators (e.g. °Brix, acidity, color index, texture) measured during field campaigns (WP5 – T5.1; WP6 – T6.2)
- Quality control of fresh horticultural output and correlation analysis between real-time sensor data and end-product evaluation. (WP5 – T5.2; WP6 – T6.1; T6.2) (Ahmad et al. 2024)

On the basis of the research done, I developed:

- Sensor selection and standard operating procedures for field-sensor calibration and food product quality scoring.
- Methodological input to the AI-model's capacity for predicting marketable quality in horticulture products.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Giuseppe Falvo D'Urso Labate - Project Activity Contribution – RP2 – at ***UGR***

Research activities:

- Design of fungal-based biofertilizers using Aspergillus niger strains for sustainable agriculture. Formulation of fermentation protocols and supporting pilot-scale validation of the resulting bioproducts.– WP4 – T4.3; WP5 – T5.1
- Definition of plant-soil sensor calibration protocols related to microbial bioformulation trials in fruit and vegetable plots, to feed the AI-based DSS irrigation module. (WP5 – T5.2; WP6 – T6.1)
- Integration of biochemical soil indicators (e.g. pH, nutrient solubilization, EC) linked to microbial inoculant activity, for input into DSS models optimized for horticulture. (WP4 – T4.3; WP6 – T6.2)

Table 1. Biomass accumulation and citric acid production by *A. niger* on potato-dextrose broth enriched with glycerol.

Medium Composition (PDB/MP) + Gly (%)	Time-course fermentation (h)	Biomass ($g.L^{-1}$)	Titratable acidity ($mmol.L^{-1}$)
0 (PDB)	40	1,80+0.06	11.0+0.5
	80	2,55+0.04	14.9+0.4
	120	5.32+0.03	**21.0+0.6**
3	40	1.87+0.05	18.0+0.1
	80	3.91+0.05	22.0+0.3
	120	4.39+0.02	**26.0+0.7**
5	40	1.71+0.06	13.1+0.2
	80	3.60+0.01	20.8+0.1
	120	**4.34+0.04**	**28.9+0.4**
8	40	1.22+0.02	9.2+0.3
	80	1.70+0.07	10.5+0.4
	120	2.20+0.07	**12.0+0.2**

(Vassileva M., del Moral Garrido L.F., Martos V., et al. (2024). The Parameters of a Fungal Fermentation Facilitate Its Formulation for Further Application in Plant-soil Conditions. Preprints.org. https://doi.org/10.20944/preprints202410.1724.v1)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Giuseppe Falvo D'Urso Labate - Project Activity Contribution – RP2 – at ***ISI***

Research activities:

- Data collection and analysis from pilot sites, focusing on low-resource farm scenarios where DSS tools were deployed to support irrigation scheduling. (WP5 – T5.2; WP6 – T6.1)
- Definition and technical monitoring of agro-environmental monitoring parameters, including leaf turgor, soil conductivity, NDVI thresholds, and microclimatic indicators, used as reference inputs in AI models described in Deliverable D5.1. (WP5 – T5.2; WP6 – T6.1)
- Strategic insights and data, offering perspective on how AI-based DSS can address food security and productivity in fragile socio-economic systems, for Pilot 4 of the project. (WP6 – T6.3; WP5 – T5.4)

(Ahmad A. et al. Front. Artif. Intell. 2024)

Image from Deliverable D5.1

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Project Activity Contribution: researchers **seconded**

		Reporting period 1 PROJECT MONTH																						
TO	NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
UGR	Giuseppe Falvo D'Urso Labate (3.83 PMs)																								
UGR	Katarzyna Kolacz (4.03 PMs)																								
ISI	Evelina Micono (5.2 PMs)																								

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Project Activity Contribution: researchers **seconded**

		Reporting period 2 PROJECT MONTH																						
TO	NAME	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
UGR	Giuseppe Falvo D'Urso Labate (3.83 PMs)																								
ISI	Giuseppe Falvo D'Urso Labate (2.73 PMs)																								
UGR	Katarzyna Kolacz (4.03 PMs)																								
ISI	Katarzyna Kolacz (3.57 PMs)																								
ISI	Evelina Micono (5.2 PMs)																								

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Project Activity Contribution: researchers **hosted**

		Reporting Period 1 PROJECT MONTH																						
FROM	NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ISI	Angelos Alexopoulos (4.03 PMs)																								
ISI	Konstantinos Koutras (3.03 PMs)																								

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

Project Activity Contribution: researchers **hosted**

		Reporting Period 2 PROJECT MONTH																						
FROM	NAME	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
UGR	Maria Vassileva (1.67 PMs)																								
UGR	Nikolay Vassilev (2.73 PMs)																								

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No. **101007702**

GRAZIE

CLOSING MEETING

22-23 May, 2025

PALERMO

ITALY