

Αξιοποίηση έρευνας στη δημιουργία βιώσιμων βιομηχανιών καινοτόμων τροφίμων

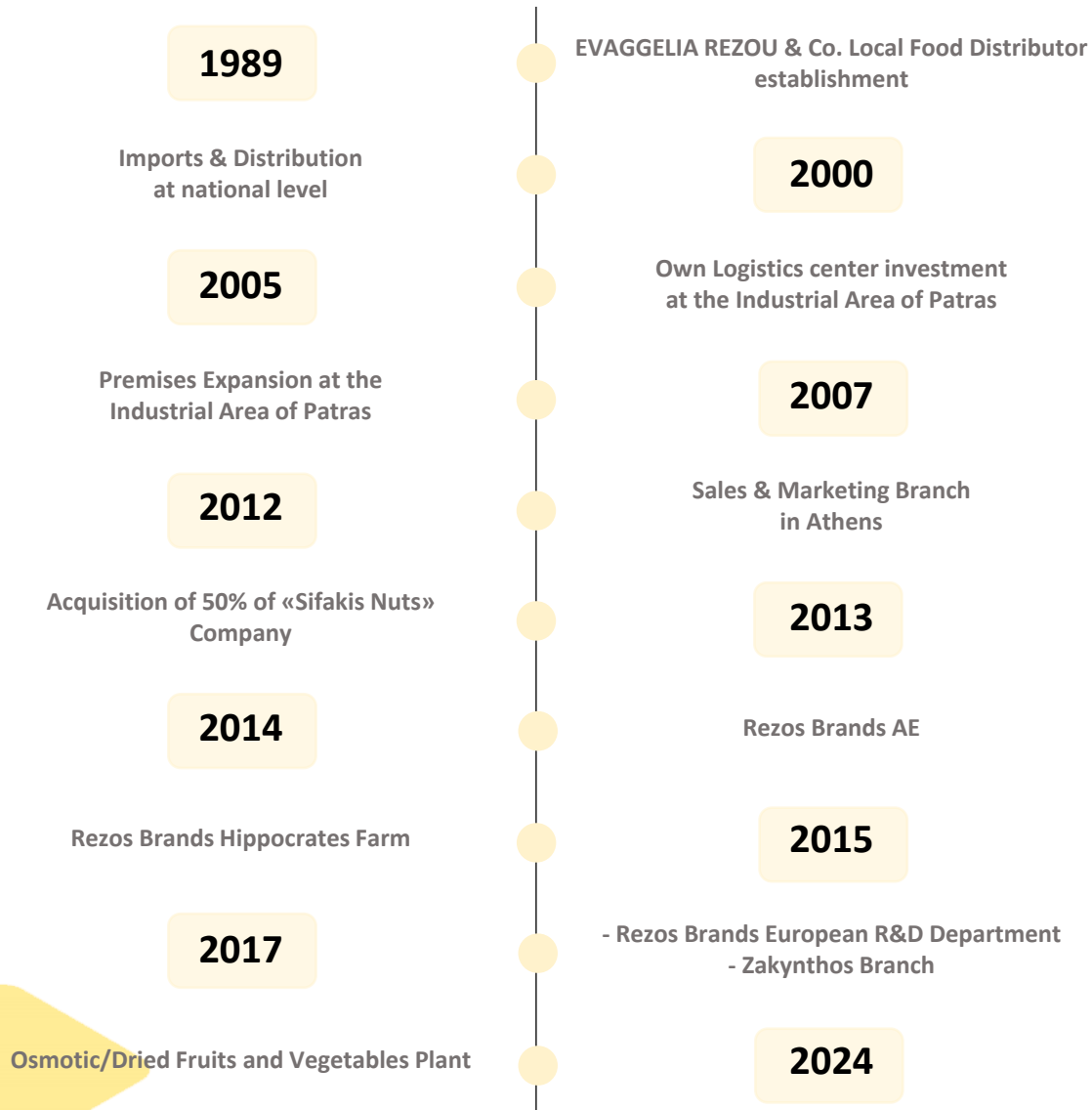
Άγγελος Ρέζος CEO Rezos Brands AE

Ενημερωτική Εκδήλωση «Σύγχρονες Τάσεις στην Επιστήμη των Τροφίμων & τη Διατροφή του Ανθρώπου»
6/12/2023



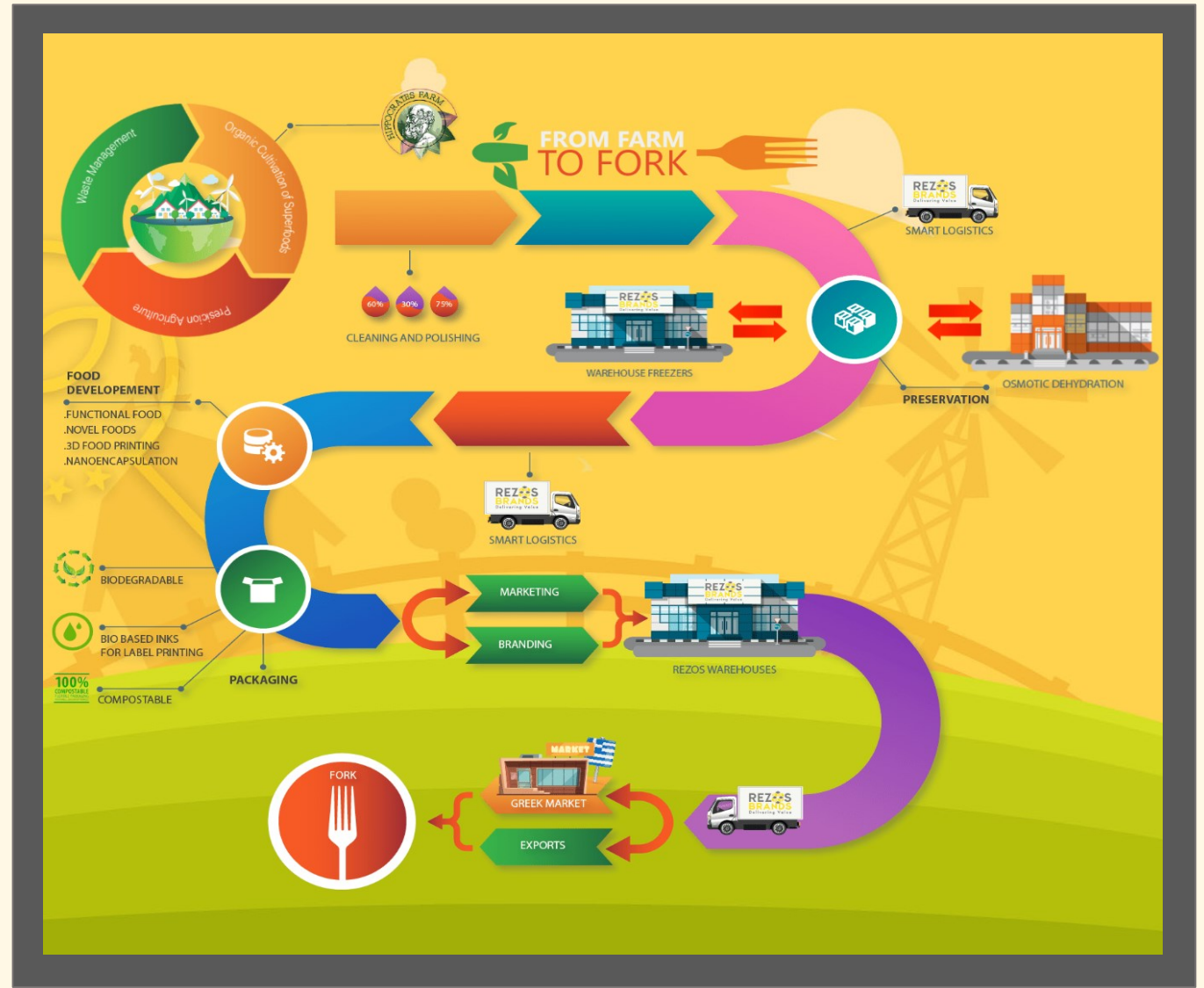
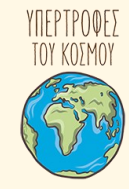
Rezos Brands

History Timeline



REZOS BRANDS

Delivering Value



Rezos Brands

Fields of Activity



Hippocrates Farm

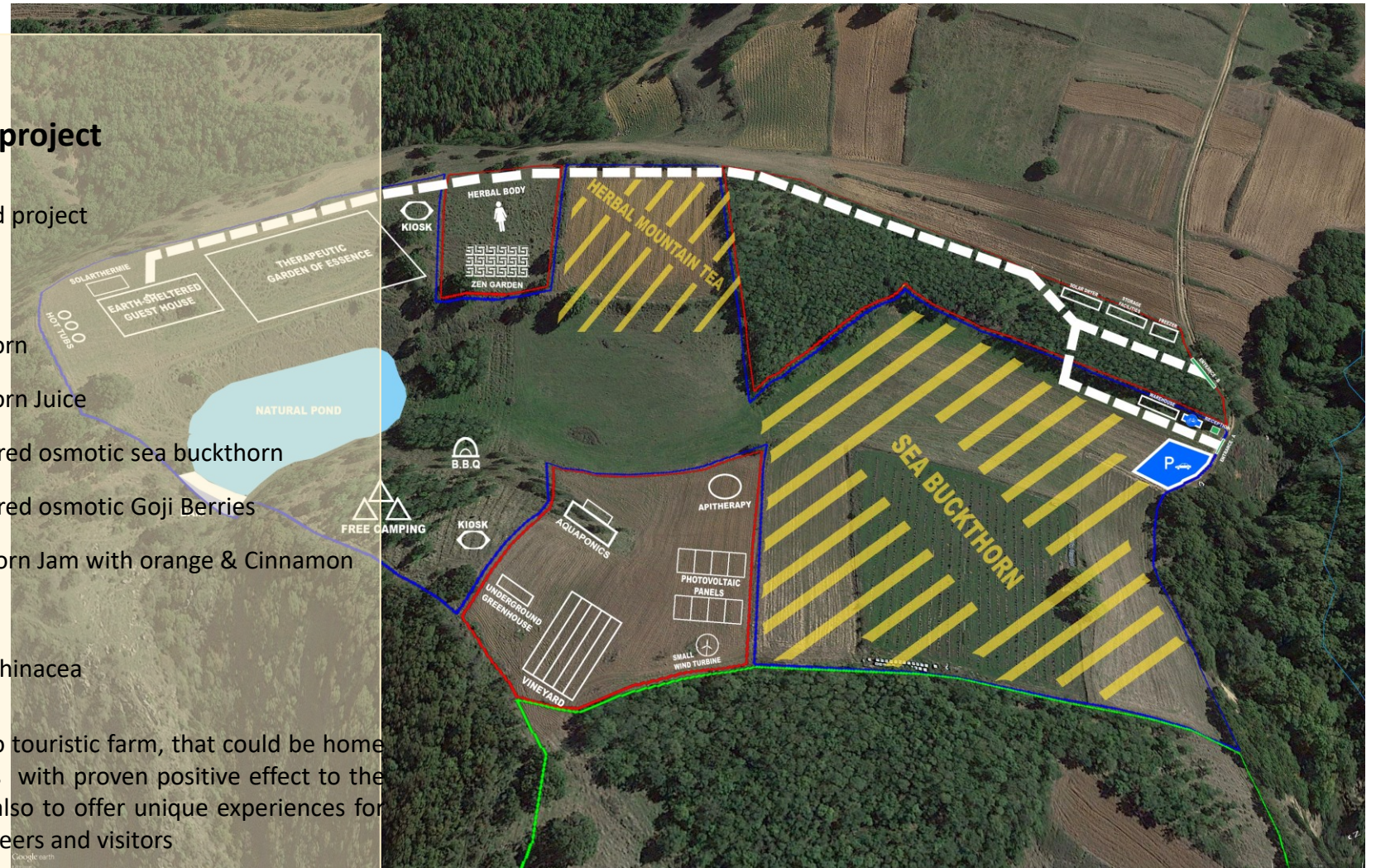




Rezos Brands Hippocrates Farm

HIPPOCRATES FARM project

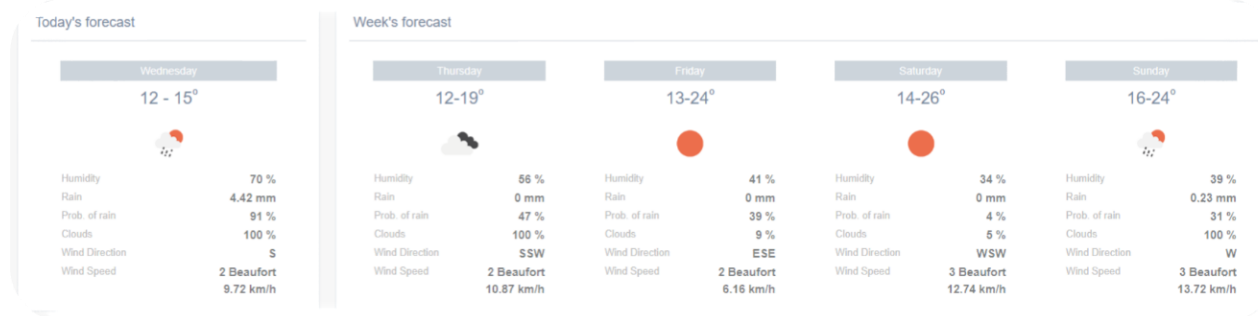
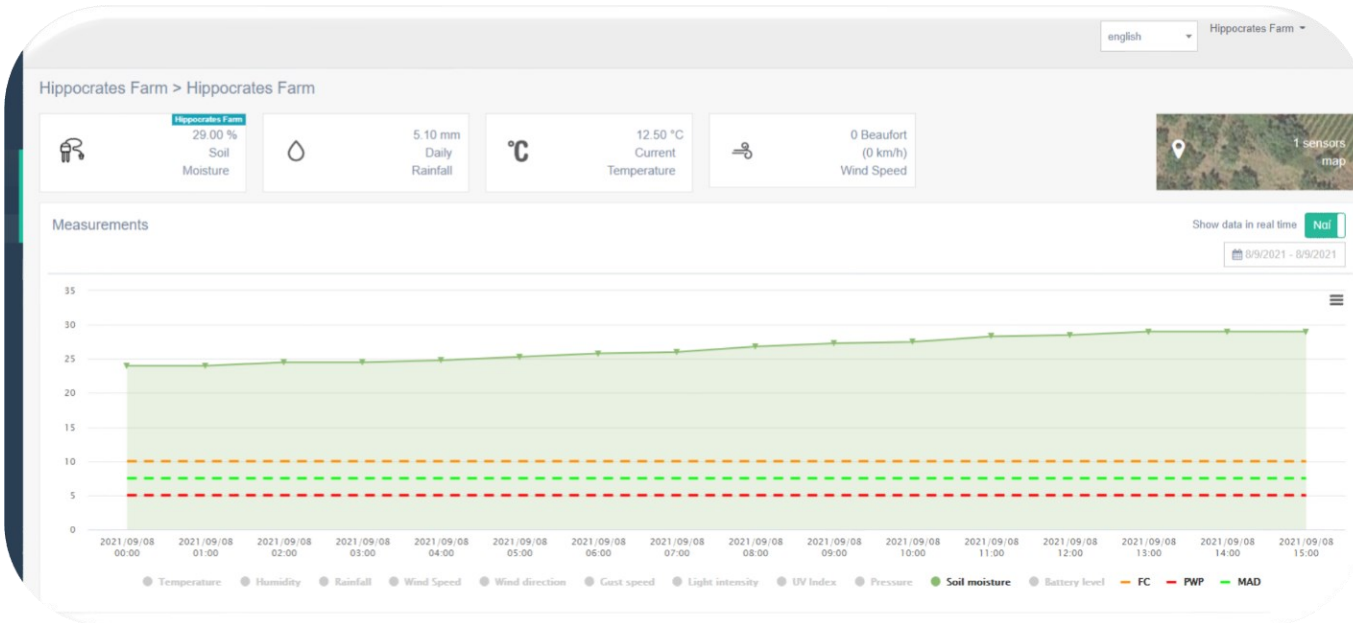
- ✓ A 6-year-old aspiring agrifood project
- ✓ **Result:** Our products
 - Osmotic Sea Buckthorn
 - Osmotic Sea Buckthorn Juice
 - Dark Chocolate covered osmotic sea buckthorn
 - Dark Chocolate covered osmotic Goji Berries
 - Meteora Sea Buckthorn Jam with orange & Cinnamon
 - Mountain Tea
 - Mountain tea and Echinacea
- ✓ **Goal:** To create an open Agro touristic farm, that could be home to excellent natural products with proven positive effect to the human body and mind but also to offer unique experiences for the farm's employees, volunteers and visitors





Rezos Brands

Hippocrates Farm – Smart Farming



Latest measurements

Hippocrates Farm	08/09/2021 15:05:55
Temperature	12.50 °C
Humidity	96.00 %
Daily Rainfall	5.10 mm
Hourly Rainfall	0.30 mm
Wind Speed	0 Beaufort 0 km/h
Wind direction	ENE
Gust speed	0 Beaufort 0 km/h
Light intensity	104.24 watt/m²
UV Index	0
Pressure	930.40 hPa
Soil moisture	29.00 %
Battery level	100.00 %

Reload values



Rezos Brands

Sustainable Innovative Technology



Hippocrates Farm Super Fruits are produced using **low temperature osmotic dehydration**, a process that **naturally preserves the fruits'** structure and nutritional properties, **without the use of preservatives**.

Through osmotic dehydration, the fruits **maintain their original taste, colour, aromas, vitamins, minerals and all their valuable elements**, whilst at the same time obtaining a distinctively **pleasant sweet taste** due to the osmotic addition of **natural fruit sugars**.

Link: <https://www.youtube.com/watch?v=aeUZ28wxPrw>

Rezos Brands HIPPOCRATES FARM



When nature is
the inspiration,
innovation
blossoms!



Hippocrates Farm on the top of European Innovation



"This project is funded by KATANA (Emerging industries as key enablers for the adoption of advanced technologies in the agrifood sector, Horizon 2020 project No. 691478), under the funding framework of the European Commission"

Rezos Brands was awarded the 1st European Innovation Award in Functional Food for its Hippocrates Farm project by the EU-funded business accelerator KATANA. Hippocrates Farm was rated as the most innovative agrifood project out of 640 projects from all over the European Continent and it is about the development of innovative functional snacks, derived from organic, Greek Sea Buckthorn of exceptional quality.





ORGANIC SEA BUCKTHORN — MUNICIPALITY OF — M E T E O R A

Hippocrates Farm is the farming division of Rezos Brands S.A., a Greek company established in 1983, implementing a vertical business model "from farm to fork", combining its people's passion for superfoods with the latest scientific agrifood innovations.

In Hippocrates Farm we follow the essence of Hippocratic medicine: **"Let food be thy medicine and medicine be thy food"**. We put it into life, in a piece of fertile land of 20 acres, in the mountains of central Greece, within a "Natura" preserved area, surrounded by emblematic landmarks such as the holy rocks of Meteora and mountain Olympus.

Sea Buckthorn, — a wonder food. —



Sea Buckthorn is a **powerful health and beauty aid** known to humans since antiquity for its **beneficial profile**. A superfruit rich in **antioxidants, amino acids, minerals, vitamins C, B1, B2, A, K, E folic acid, omega 3, 6, 9** and the **rare 7 fatty acids** and over **190 bioactive nutrients** in total.

A Greek superfruit born in our farm in Meteora.



**Low Temperature
Osmotic Treatment.**
A process that naturally preserves the fruits' original structure, taste, color, aromas, vitamins, and all their valuable elements.



Osmotic Sea Buckthorn covered with dark chocolate



70% dark chocolate with Osmotic Sea Buckthorn



Oat bites with Osmotic Sea Buckthorn and matcha tea



Organic Sea Buckthorn Juice



Organic Sea Buckthorn from Hippocrates Farm in Meteora.

□ Rezos Brands Investments



Rezos Brands

Innovative sustainable drying methods

Fruits, herbs & vegetables

Serbia Plant



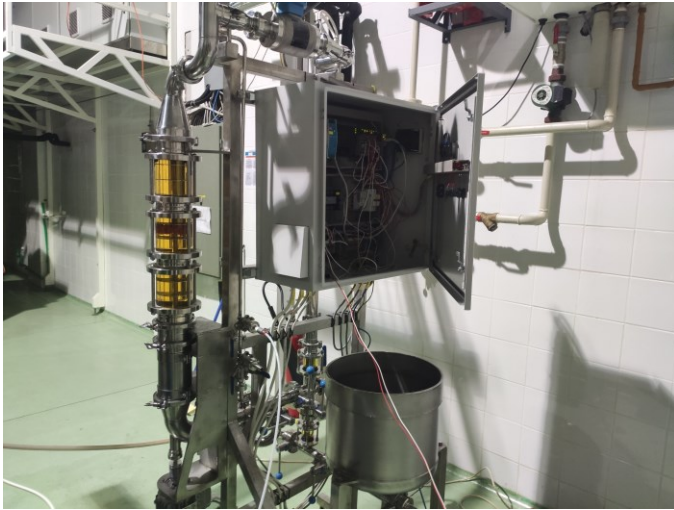
Rezos Brands

Innovative Sustainable Drying method:
Hibernation on fruits, herbs & vegetables
Serbia Plant



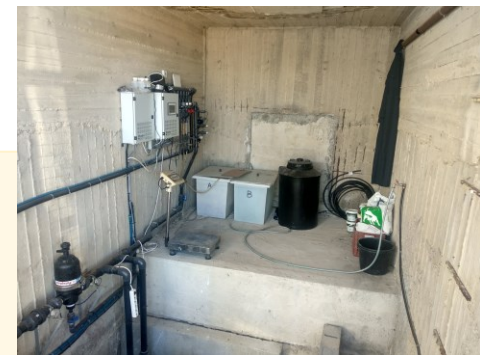
Rezos Brands

Innovative sustainable Drying method
Osmotic kinetic dehydration on fruits, herbs & vegetables
Serbia Plant



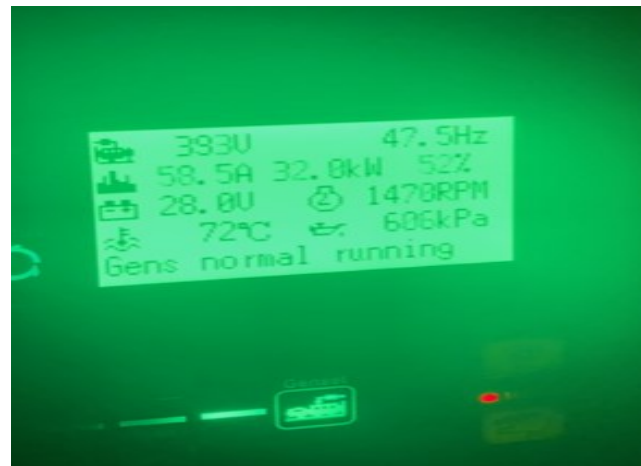
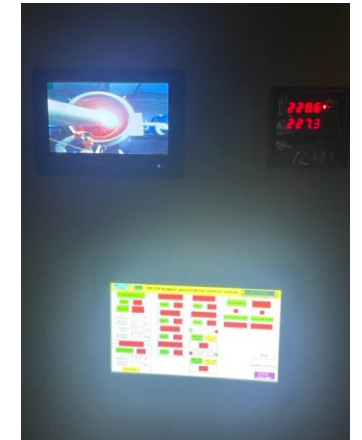
Rezos Brands

Innovative Aeroponic Urban Greenhouse: Cultivation of micro greens
Patras Greece



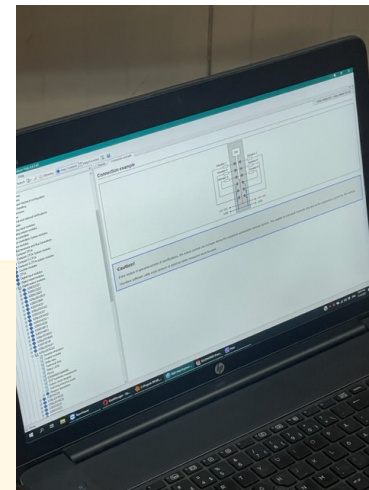
Rezos Brands

Valorization of Agri Waste from Heineken brewery – Energy Project
Gasifier : Production of electric, thermal energy & SynGas
Industrial Area of Patras Greece



Rezos Brands

Valorization of AgriWaste from Heineken brewery: Protein Project
Pilot Extraction Unit
Industrial Area of Patras Greece



Rezos Brands

AgriFood & Health Technologies Laboratory
Patras Greece



HPLC PerkinElmer



Spray Dryer



Ultrasound Extraction and Concentration Unit



ETHOS microwave extraction system



Microplate Spectrophotometer



Centrifuge Thermo Scientific

Rezos Brands

Rezos Brands
Investments
2023-2025
Serbia & Greece

Investments on Innovative Sustainable Facilities

Green House



Dry Fruits and
Vegetables Plant
Serbia



Gasifier Unit



Upscaling SB
Cultivation at
Hippocrates Farm



Dry Fruits and
Vegetables Plant
Greece



AgriFood/ Functional
food Tech Lab



**Total Investments
2023-2024**

5.500.000 Euros



EUROPEAN
R&D
DEPARTMENT
Τμήμα Ευρωπαϊκής
Έρευνας & Ανάπτυξης

European R&D department

**“A multidisciplinary vertical research department of an innovative SME,
undertaking European projects R&D activities throughout “from Farm to Fork” value chain”**



CAPACITIES

EXPERTISE

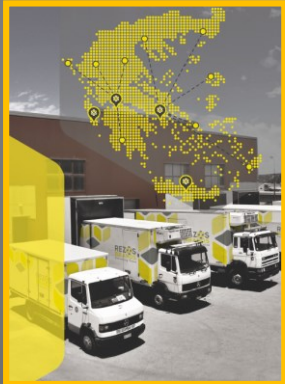
- **+30 years** of experience
- **Vertical business model “From Farm to Fork”**
- **Multidisciplinary European R&D Team**
- **Precision agriculture - Agri-tech**
- **Agri waste valorisation**
- **Novel/Healthy Food R&D**
- **Digitalization of the “Farm to Fork” value chain**
- **Circular economy**
- **Energy from waste**
- **Food from waste**

STRATEGIC INVESTMENTS

- Development of innovative manufacturing approaches
- Smart, sustainable and inclusive growth through the production of **innovative food products**
- **Pioneering processing techniques** (e.g., extraction, encapsulation)
- **Rezos Brands Investments**
 - Precision Agriculture/Meteo Station
 - 50kw biomass gasifier/Drum dryer
 - Spray dryer
 - HPLC
 - ETHOS microwave extraction system
 - Ultrasound Extraction and Concentration system

INFRASTRUCTURE

- **Warehouse facilities and Logistics center** (Patras, Greece)
- **Energy production plant/Gasifier** (thermal, electric, SynGas by valorizing Agriwaste – biomass)
- **Functional Food, Agrifood & Health Technologies Lab**
- **Osmotic dehydration plant:** Fruits, herbs & vegetables, Serbia and Greece
- **Urban Greenhouse Patras**
- **Hippocrates Farm:** sea buckthorn & other pilot cultivations farm (Meteora, Greece)

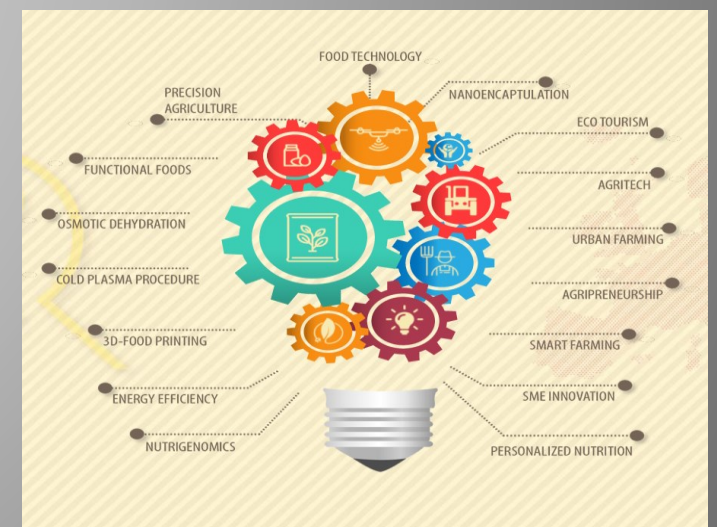


INTERESTS – APPLICATIONS

FOOD & HEALTH	AGRI FOOD TECH	DIGITAL/SMART TECH	ENERGY	CIRCULAR ECONOMY
<ul style="list-style-type: none"> ➤ Food systems ➤ Food safety – Food security ➤ Biotechnology ➤ Extraction & Encapsulation ➤ Freeze/spray drying methods ➤ Sustainable food development methods. ➤ Fortified/enriched food products ➤ Personalize nutrition ➤ Healthy/functional foods for specific target groups (athletes, elderly, metabolic syndromes etc) 	<ul style="list-style-type: none"> ➤ Innovative Agri Business models ➤ Innovative food tech ➤ Precision Agriculture/Smart farming ➤ Organic Cultivation of superfoods ➤ Innovative fruits & vegs dehydration - drying & preservation technologies. ➤ Sustainable packaging 	<ul style="list-style-type: none"> ➤ Smart Digital platforms (AI tech). ➤ IoT, sensors, AI, applications to cultivation, irrigation & crops. ➤ Digital platforms on training, coaching & mentoring at agri-food value chain. ➤ Blockchain tech from Farm to Fork ➤ Smart manufacturing 	<ul style="list-style-type: none"> ➤ Energy processes from agriwaste ➤ Bioenergy ➤ Gasifier : valorization of agriwaste for the production of thermal, electric energy and SynGas. ➤ Valorization of agriwaste for the production of biomass ➤ Green energy 	<ul style="list-style-type: none"> ➤ Industrial Sustainability ➤ Valorization of waste ➤ Improvement of end products through circularity. ➤ Bioeconomy

MOST RECENT EU PROJECTS

PROJECT NAME	PROGRAMME	YEAR
RIA4FOOD: Multi-Actor Research and Innovation Approaches for Functional Food	HORIZON-TMA-MSCA-SE	2023
TALLHEDA: Transforming Access To Excellence with successful alliances of Higher Education in Digital Agriculture	HORIZON-WIDERA-2023-ACCESS-03-01	2023
SYMPEGA: Pilot cultivation of five (5) varieties of Sea Buckthorn, using Precision Agriculture techniques , in purpose the development of high nutrition value yogurt, as healthy diet standard.	National co-funded “Rural Development Programme” : Strategic Targets for Agricultural Development And Restructuring of the Countryside	2023
SAKAMI: Partnership of a precision agriculture's optimum business model exploitation and application in the Hellenic cultivation of sea-buckthorn , aiming to the production of high nutritional value food products	National co-funded “Rural Development Programme” : Strategic Targets for Agricultural Development And Restructuring of the Countryside	2023
AI4VET4AI – AI – powered Next Generation of VET	ERASMUS+	2023
Trust Food – Advanced Digital Skills on Blockchain for Trusted Food Supply Chains	H2020DIGITAL EUROPE	2023
YOUng people STANDing OUT through the promotion of local heritage in rural areas	ERASMUS+ KA2	2022
BOOSTing agribusiness acceleration and digital hub networking by an advanced training program on sustainable Precision Agriculture	ERASMUS+ KA2	2022
TOMAS - Training Opportunities for Migrants in the Agrifood Sector	ERASMUS+	2021
Stay-on- Unlocking Youth Potential_A community based and driven project	EEA and Norway Grants	2021
AccelWater - Accelerating Water Circularity in Food and Beverage Industrial Areas around Europe	H2020	2020
PHAEDON: Transparency and traceability in the supply chain using distributed ledger technologies : Sea Buckthorn Case	Research – Create – Innovate_2014-2020 NSRF	2020
agroBRIDGES – Building bridges between consumers and producers by supporting short food supply chains through a systemic, holistic, multi actor approach-based Toolbox	H2020	2020
FRIETS – Sustainable optimization of the value chain of added-value fresh and dried berries through the integration of Precision Agriculture management strategies and innovative dehydration and edible coating	HORIZON-TMA-MSCA-RISE	2020
SMART4ALL- Selfsustained cross border customized cyberphysical system experiments for capacity building among european stakehorders.	H2020	2019



Rezos Brands

European R&D Circular Economy Food industry Use Case



Rezos Brands

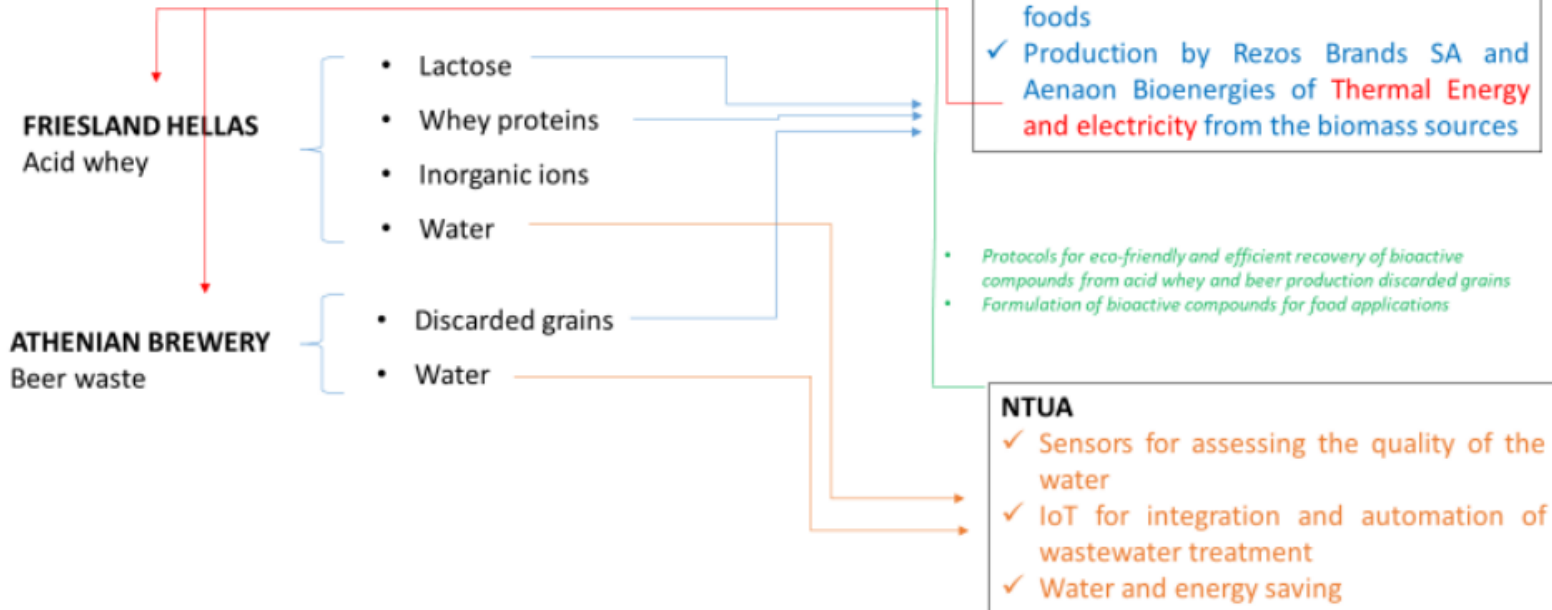
AccelWater

H2020 – SPIRE– Industria Symbiosis
Patras Industrial Area Pilot



Industrial Symbiosis

Generation of electricity from biomass by the process of Biomass Gasification and its transmission through a local (short-distance-loss) network.



Rezos Brands

European Research on Sustainable Food technologies

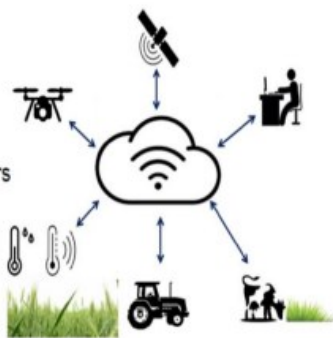


Agrifood Technologies

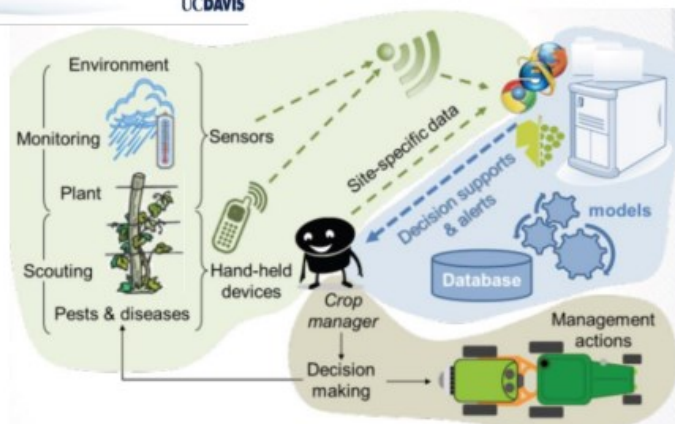


Smart Agri & IoT
Agripreneurs of the future Digitization,
Connectivity, Climate Change, SPA

- Sensors
- Drones
- Satellite
- Phones/Tablets/Computers
- Smart farm equipment
- Animal monitors
- Cloud computing
- Wireless communications

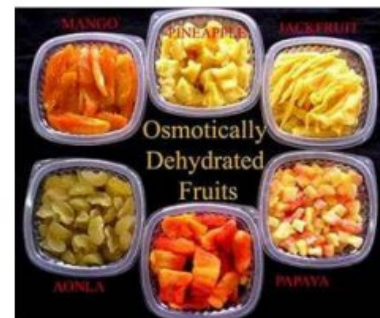


UC DAVIS



Food Technologies

Osmotic Dehydration



Microencapsulation



**Hungry for Innovation:
The Rise of 3D-Printed Food for a healthy diet & personalize nutrition**





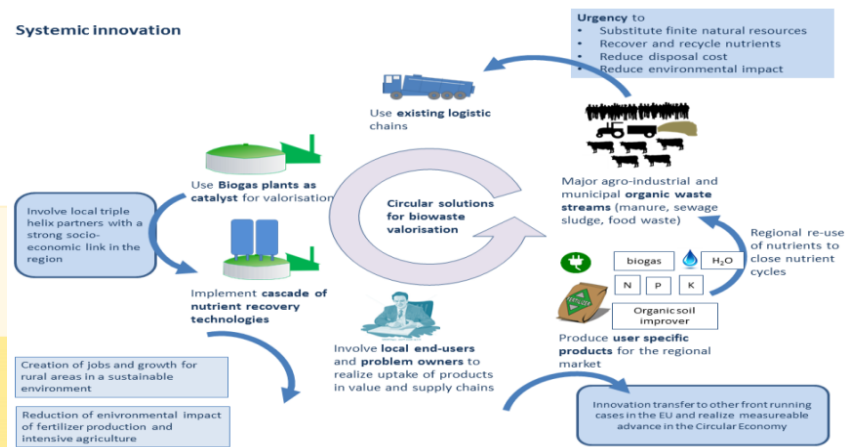
1. Osmotic Dehydrated – Dry Fruits & Vegetables Plant - Serbia



2. AgriFood Incubator – Patras Greece



3. Energy production plant – VIPE Patras Greece



4. Novel Food Laboratory Patras Greece



Rezos Brands

European R&D Dpt Staff - Researchers



Eugenia Karamouzi, MSc
Director

- European Law - HRM
- Law & Politics of the European Union
- Food Technology Innovation Manager

Panagiotis Panopoulos, MSc, PhD
Deputy Director
Medical Biochemist

Dimitrios Tsolis, MSc, PhD
Electrical & Computer Engineer

Natasa Vlachou, MSc
Physicist & Applied Mathematics

Thanasis Leontaritis, MSc,
Financial Advisor
Sustainability Planner

Katerina Konstantinou, MSc, PhD
Biologist - Physiologist

Christiana Genethliou, MSc, PhD
Chemical Engineer

Christos Karras, MSc, PhD (c)
Computer Engineer

Marianna Lagonikou, MSc
Agronomist – Animal Scientist, Food Technologist

Konstantina Kouratou, MSc
Economist – Data Analyst

Christina Korovila, MSc,
Computer Engineer

Georgia Thanopoulou BA, MSc (c)
Geologist – Digital Analyst

Ilias Monastiriotes BA (c)
Computer Engineer



Rezos Brands

European R&D Dpt Publications



1. Nicole Ollinger, Cathrina Neuhauser, Bettina Schwarzinger, Melanie Wallner, Clemens Schwarzinger, Bernhard Blank-Landeshammer, Roland Hager, Nadiia Sadova, Ivana Drotarova, Katrin Mathmann, **Eugenia Karamouzi**, **Panagiotis Panopoulos**, Gerald Rimbach, Kai Lüersen, Julian Weghuber and Clemens Rohrl: **Oils and extracts derived from sea buckthorn alter key mechanisms of postprandial glucose homeostasis – a comprehensive analysis utilizing in-vitro and in-vivo models. Under submission in Molecular Nutrition and Food Research.**
2. Zompra, A.A.; Chasapi, S.A.; Karagkouni, E.C.; **Karamouzi, E.**; **Panopoulos, P.**; Spyroulias, G.A.: **Metabolite and Bioactive Compounds Profiling of Meteora Sea Buckthorn Berries through High-Resolution NMR Analysis.** *Metabolites* 2021, 11, 822. <https://doi.org/10.3390/metabo11120822>
3. Thomas Bournaris, Andreas Mattas, Anastasios Michailidis, Dionisio Andujar, Manuela Correia, Valentina De Pascale, Manuela Díaz, Belén Diezma, Alessandro Guadagni, **Eugenia Karamouzi**, Jeremy Karouta, Anne Krus, Stefania Lombardo, José Rafael Marques da Silva, **Panagiotis Panopoulos**, Manuel Pérez-Ruiz, Angela Ribeiro, Dimitrios Tsolis, Constantino Valero, Marco Vieri: **SPARKLE e-Learning Platform for Sustainable Precision Agriculture.** *HAICTA 2020*: 334-339.
4. Asimakopoulou A, **Panopoulos P**, Chasapis CT, Coletta C, Zhou Z, Cirino G, Giannis A, Szabo C, Spyroulias GA, Papapetropoulos A: **(2013) Selectivity of commonly used pharmacological inhibitors for cystathionine β synthase (CBS) and cystathionine γ lyase (CSE).**
5. Módis K, **Panopoulos P**, Coletta C, Papapetropoulos A, Szabo C.: **(2013) Hydrogen sulfide-mediated stimulation of mitochondrial electron transport involves inhibition of the mitochondrial phosphodiesterase 2A, elevation of cAMP and activation of protein kinase A.**
6. Aglaia Liopa-Tsakalidi, **Dimitrios Tsolis**, Pantelis Barouchas, Athanasia-Eleftheria Chantzi, Athanasios Koulopoulos and Nikolaos Malamos: **Application of mobile technologies through an Integrated Management System for agricultural production, 6th International Conference on Information and Communication Technologies in Agriculture, Food and Environment (HAICTA 2013).**
7. Athanasia Eleftheria Chantzi, Charikleia Plessa, Iason Chatziparadeisis Gkanas, **Dimitrios Tsolis** and Athanasios Tsakalidis: **An Innovative Augmented Reality Educational Platform Using Gamification to Enhance Lifelong Learning and Education in Food Science, Intelligence, Information, Systems and Applications (IISA2013), Pireus 2013, Greece.**



Thank you



REZOS
BRANDS
Delivering Value

European R&D Department

196 New National Road Patras – Athens
26443, Patras, Greece

Website: <https://rezosbrands.com/>

Email: projects@rezosbrands.com