Thematic area

Agro-food Value Chain

Section I

Topic - Implementation of analytical tools and digital technology to achieve traceability and authenticity control of traditional Mediterranean foods

Type of Action

IA - Innovation Action

Budget

1.599.500 €

Duration

48 months

Coordinating country

Portugal

Participating countries/ 3

Research Units/ 11

of which **6 SMEs**

Project 15/ Section I

TRACE-RICE

Tracing rice and valorizing side streams along Mediterranean blockchain

Context

Rice is the primary staple food for about half of the world's population and it provides 20% of the calories consumed worldwide. The relevance of rice in the European diet has been increasing due to its fundamental role in modern and healthy diets. Most of the rice consumed in Europe is grown in the EU Mediterranean countries.
Rice is endowed with a rich genetic diversity that covers a great variety of species and origins, some more valued than others. Rice-based foods are highly prone to adulteration. Rice fraud was reported by EFSA as an emerging food issue. The principal occurrence are fraudulent variety claims that cause significant loss of value for the consumers and jeopardize brand value of honest producers. In addition, fraudulent misrepresentation related to sustainability issues (pesticids residues and mycotoxins) is an increasing risk. TRACE RICE offers an innovative solution to fraud and safety challenges focusing on natural, healthy and tasteful rice-based foods by applying new technologies for product traceability. It will do so with an integrated full chain approach (from farm to fork), for raw rice and ready-to-eat rice, which will enhance the competitiveness of SMEs operating in the rice sector.

Objectives

TRACE-RICE is focused on providing the Mediterranean rice industry with: highly-efficient and affordable analytical and digital technologies that will facilitate fast traceability and authenticity control of rice varieties; new nutritional and healthy tasty rice-based foods and high added-value products based on an interdisciplinary integrated chain-wide and circular economy approach. This will be achieved in 4 main pilot activities and 3 market replication cases, starting the technological developments at prototype scale (TRL3-5) and will move to validation/production stages (TRL7-8).

Expected impacts

Environmental impacts
- Support contaminant mitigation by promoting the reduction of the use of chemicals.
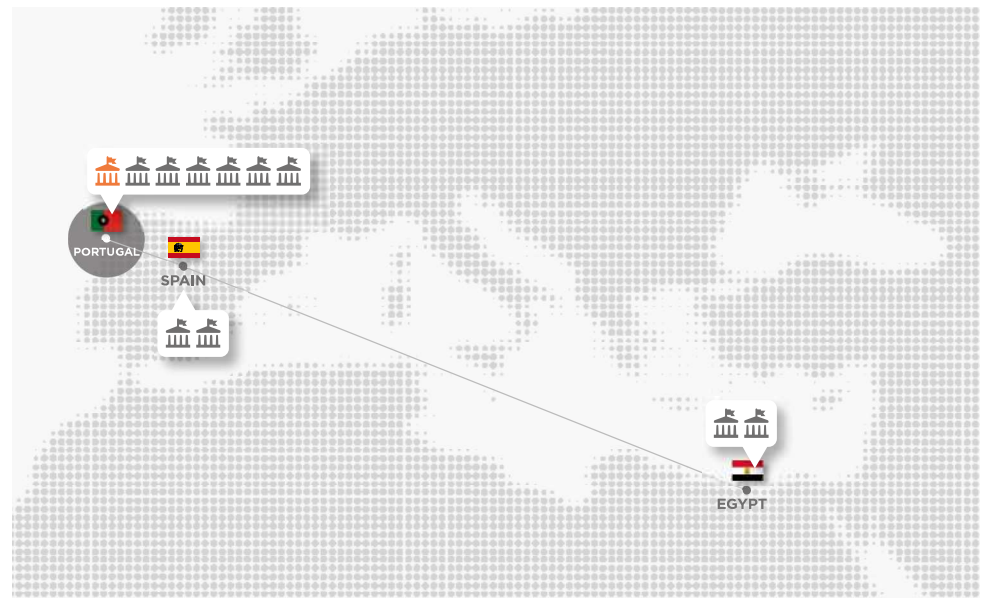
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Instituto Nacional de Investigação Agrária e Veterinária, I.P.

Scientific Coordinator:
CARLA, Brites

- Reduce fossil fuels consumption by using blockchain technologies.
- Support the goals of the EU biodiversity strategy by the valorization and genetic characterisation of adapted varieties and integration of datasets in a network database.

Social impacts
- Improve the quality of life of consumers by improving the rice quality control and offering healthier and safer products by upholding quality standards.
- Obtain new high added value products and contribute to food diversity, promoting Mediterranean cultural heritage and boosting the circular economy.
- Increase the confidence and producer-consumer engagement in Mediterranean foods, ensuring traceability and origin of rice varieties and reducing fraud and contamination.

Economic impacts
- Foster importance to the Mediterranean rice commercialization in international markets by the mitigation of rice fraud by the development of rice authenticity tools (DNA-based and predictive models using machine learning strategies).
- Adopt measures to reduce the extreme volatility of prices of rice based foods in the market and facilitate timely access to information thanks to blockchain technologies.
- Introduce new business model for a technologically stagnant sector.
- Improve the competiveness of local producers and SMEs by fostering interaction between scientific and entrepreneurial stakeholders.

8M t
of paddy rice produced in 2018ﬁ in the Mediterranean area. Among the Mediterranean countries rice is cultivated mainly in Egypt.

Source: http://www.fao.org/faostat/en/#home

4,9Mt
in Egypt*

160kt
in Portugal*

810kt
in Spain*

PROBLEMS

RICE FRAUD
FRAUDULENT VARIETY CLAIMS. 46% OF BASMATI IN UK IS ADULTERATED

RICE CONTAMINATION
PESTICIDES RESIDUES MYCOTOXINES

RICE RELEVANCE

WORLD RICE PRESENCE
20% OF THE CALORIES WORLDWIDE

RICE CONSUMPTION
5.5 KG PER CAPITA AND PER YEAR (EU) AND 72.5 KG WORLDWIDE

RICE IN MEDITERRANEAN
8 MTN IN 2018 WITH MAIN PRODUCERS: EGYPT, ITALY, SPAIN AND PORTUGAL

WORLD RICE PRODUCTION
510 MTN IN 2018 WITH MAIN PRODUCERS CHINA AND INDIA. EGYPT IN 14TH POSITION

RESEARCH RESULTS PRACTICAL EXPERIENCES
INIAV, UNL-ITQB IBET, CSIC-IATA

PILOT 1
Test solutions for product traceability
MATERDYNAMICS, EM, CASA DO ARROZ

PILOT 2
Test solutions to decrease chemical fumigations
EM

Replication of successful CASE STUDIES
U.ALEXANDRIA RTTC

PILOT 3
Test natural bioactive ingredients in bakery products
DPL

PILOT 4
Test solutions for blockchain integration
BGI, EM, CASA DO ARROZ

Market replication cases
BGI, CASA DO ARROZ, U.ALEXANDRIA

Communication