ReCROP - Bioinocula and CROPping systems: an integrated biotechnological approach for improving crop yield, biodiversity and REsilience of Mediterranean agro-ecosystems

RESILIENT SMALLHOLDER INITIATIVE

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Section 2 Call 2020 - Multi-topic
Topic 2.2.1 (RIA) Re-design the agro-livelihood systems to ensure resilience

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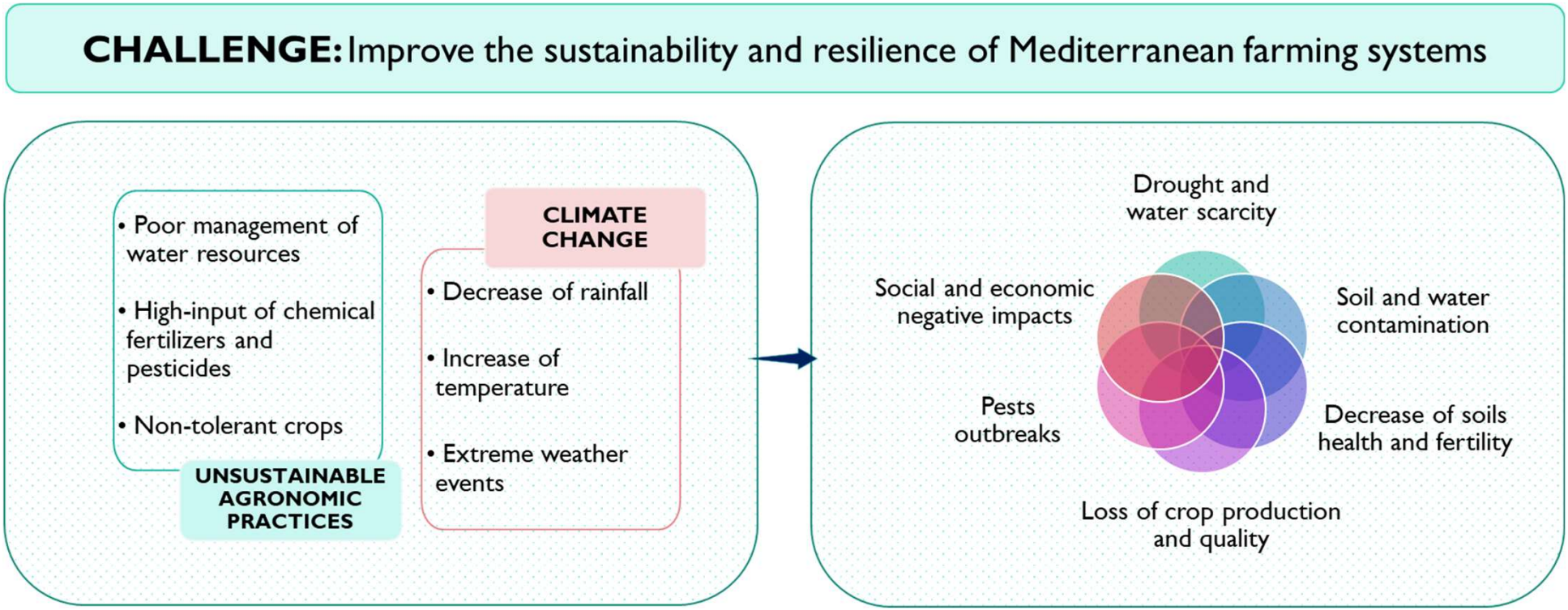
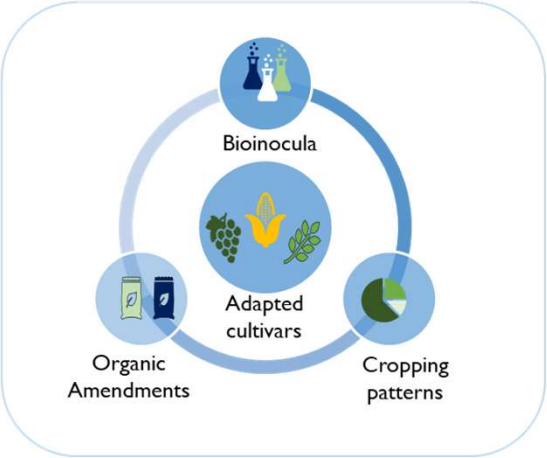
The basis for ReCROP project...



…foster sustainability and resilience of agricultural production systems (…) combined use of biotechnological tools, such as bioinoculants (mycorrhiza-MF and plant growth-promoting bacteria-PGPB), and environmentally friendly agronomic practices.

ReCROP Strategy



- **The established and newly set-up field sites** in each country are being used to study the beneficial effects of cropping systems, bioinoculation, and amendments in 3 important Mediterranean crops - **vineyards**, **maize** and **aromatic/medicinal** plants

A **multi-actor approach** is being implemented to:

- identify barriers and opportunities related to technical and socioeconomic aspects (close proximity to farmers to incorporate local knowledge).
- identify solutions to increase crop production in a sustainable way while ensuring farmer's incomes

Sustainable farming practices

CROPS

- Improved and adapted varieties

AMENDMENTS


Biosolids


Manure


Compost


Biochar


Green wastes

CROPPING PATTERNS

- Sequence of crops, intercropping, winter crops

↑ Soil health

↑ Crop yield

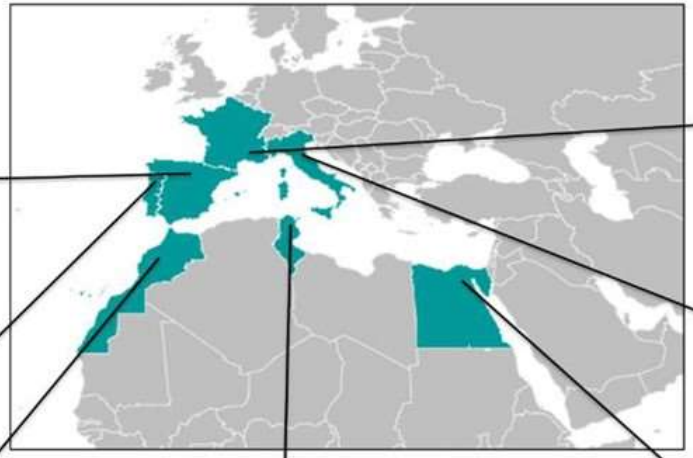
Microbial-based biotechnological tools (BIOFERTILIZERS)

Experimental field trials

Spain

Vineyards
- Mulching

Maize crops
- Organic *vs* conventional
- Crop rotation



France

Vineyards
- Natural cover crop all year long
- Natural cover crop in winter
- Seeded cover crop in winter

Portugal

São João da Pesqueira, region of Douro

Vineyards
- Bioinoculation

Morocco

Aromatic/medicinal crops
- Bioinoculants,
- Organic amendment
- Intercropping

Tunisia

Experimental platform TRIP, National Agronomic Institute of Tunisia , Tunis

Aromatic/medicinal crops
- Intercropping with legumes
- Intercropping with olive trees
- Intercropping with legumes and olives trees

Egypt

Experimental Farm of the Faculty of Agriculture, Fayoum University

Maize crops
- Intercropping
- Composted biochar
- Effective microorganisms
- Antioxidant foliar application

Italy

Aromatic/medicinal crops
- Inocula
- Compost

Vineyards
- Inocula
- Compost

ReCROP

Main Outcomes

- **Guidelines for farmers** concerning **widely adaptable agricultural practices** for soil health and sustainable agricultural productivity in the Mediterranean region
- Characterization from a socioeconomic point of view of the main drivers to encourage farmers to switch towards greener practices and promote their acceptability
- Comprehensive characterization of soil biodiversity profiles through the combination of classical taxonomy and NGS technologies to promote "productivity-biodiversity" binomials helping farmers in decision making

ReCROP contribution for enhancing Smallholders Resilience

Enhanced Soil Health

↑ Organic matter
↑ Microbial activity
↑ Nutrient availability
↑ Structure
↑ Biodiversity

Improved Water-Use Efficiency

↑ Soil water retention capacity
↑ Water uptake
↓ Reduction of irrigation needs
↑ Preservation of natural resources

Improved Long-Term Productivity and Sustainability

↑ Root systems
↑ Crop resilience
↑ Crop yield

Reduced Reliance on Chemical Inputs

↓ Nutrient losses
↑ Nutrient uptake
↑ Root systems
↓ Costs

Enhanced Knowledge

- Demonstrations sessions
- Workshops
- Seminars

Bioinoculants and sustainable farming practices

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Coordinator

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