HortiMED Project (Grant Number 1915) is part of the PRIMA programme supported by the European Union
OUTLINE

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# GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Title</th>
<th>Towards circular horticulture: closing the loop on Mediterranean greenhouses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Spain, Egypt and Algeria</td>
</tr>
<tr>
<td>Duration</td>
<td>48 months</td>
</tr>
<tr>
<td>Start date</td>
<td>01/03/2020</td>
</tr>
<tr>
<td>End date</td>
<td>29/02/2024</td>
</tr>
<tr>
<td>Total budget</td>
<td>1.750.000 EUR</td>
</tr>
<tr>
<td>PRIMA contribution</td>
<td>1.556.500 EUR</td>
</tr>
<tr>
<td>Grant Agreement</td>
<td>1915</td>
</tr>
<tr>
<td>Programme</td>
<td>PRIMA H2020-Section 1</td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.hortimed-prima.eu">www.hortimed-prima.eu</a></td>
</tr>
<tr>
<td>Social media</td>
<td><a href="https://twitter.com/@hortimedPRIMA">@hortimedPRIMA</a></td>
</tr>
</tbody>
</table>
HortiMED CONSORTIUM

COORDINATOR

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University of Mohamed Khider Biskra (UMKB)
✓ Irrigation demands in the Mediterranean region are projected to increase between 4 and 18% by the end of the century due to climate change alone; while population growth and increased demand, may escalate these numbers to 22-74%.

✓ Food products, crop and fish yields are projected to decline in many Mediterranean areas due to climatic and other stress factors.

✓ Urgent need for technological updating of greenhouse industry to:
  • face the increasing competition arising from globalisation
  • minimize the environmental impacts (e.g. discharge of nutrients and growing eutrophication trends, intensive water use, excessive pesticide use...)

Optimal greenhouse management is required to ensure unrestricted growth at a yield close to the maximum potential, while minimizing unsustainable exploitation of resources, especially energy, soil & water.
HORTIMED OBJECTIVES

OVERALL OBJECTIVE
To provide the Mediterranean horticultural community with innovative tools to enable resource efficient year round greenhouse cultivation by harnessing the potential of both simple and advanced technologies for smart nutrient, irrigation & climate control, and integrated pest management taking into account their feasibility and cost-effectiveness at individual greenhouse level.

SPECIFIC OBJECTIVES
SO1- To develop and test a user-friendly and flexible Decision Support System (DSS) allowing smart nutrient, irrigation & climate control, and integrated pest management in greenhouses through:
✓ Expert advisory services to help farmers in intensive knowledge tasks where climatic, crop and nutrient variables decisively influence crop growth and productivity (precise water & fertilisers’ needs, efficient climate control…)
✓ Efficient and cost-effective partial or full automation of greenhouses (fertigation, ventilation, heating, etc.)
HORTIMED OBJECTIVES

SO2- To demonstrate the potential of biological agro-ecological technologies to close the loop in Mediterranean greenhouses by validating aquaponics systems based on the combination of IMTA and hydroponics to deliver high quality Mediterranean horticultural and fish products with improved WUE and NUE.

SO3- To provide farmers with tools for environmentally friendly integrated pest management in horticultural greenhouses by testing bio-based pest management tactics for effective pest control in horticultural greenhouses.

SO4- To validate HortiMED technologies in low, medium and high technology greenhouses from Egypt, Algeria and Spain and conduct a socioeconomic and environmental analysis of the technologies through Life Cycle Assessment and Cost-Benefit analyses.

SO5- To achieve well-targeted communication and effective transfer of the project results to stakeholders to successfully embed the HortiMED results into local horticultural community systems.
# HORTIMED TARGET AUDIENCE

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural &amp; aquaculture producers</td>
<td>This group represents the potential end-users of the developed systems.</td>
</tr>
<tr>
<td>Intermediate Users – Agricultural Associations</td>
<td>They act as a bridge to farmers and to R&amp;D and to Governmental Institutions and have a key role as essential enablers to scale up corporate action on sustainable development and to transfer technology to industry.</td>
</tr>
<tr>
<td>Scientific and research groups</td>
<td>This group will allow the further exploitation of the obtained results for scientific and societal purposes.</td>
</tr>
<tr>
<td>Greenhouse technology providers &amp; environmental service providers</td>
<td>The successful promotion of the sustainability and natural resources savings requires experts that provide advice and technical assistance to companies for the implementation of the necessary methodologies and technologies.</td>
</tr>
<tr>
<td>Legislators / Standardization bodies</td>
<td>By legislators reference is made to the agencies supporting the implementation of management of water, land, ecosystem protection and food production in the Mediterranean area.</td>
</tr>
<tr>
<td>Consumers / Civil Society</td>
<td>The Sustainable Development provides principles for communicating environmental performance, such as transparency, reliability, and clarity. This will enable general public to take better informed purchasing decisions.</td>
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</table>
Towards circular horticulture: closing the loop on Mediterranean Greenhouses
HORTIMED-EXPECTED IMPACTS

INNOVATIONS DEVELOPED ENABLING SUSTAINABLE AND EFFICIENT AGRICULTURE AND FOOD SYSTEMS

✓ Automatic control system for the management of aquaponics and hydroponics
✓ AI-based software platform for smart monitoring of greenhouses
✓ IMTA aquaponics for water and nutrient efficient fish and crop production
✓ Hybrid modelling for smart greenhouse control

INCREASED COMPETITIVENESS OF MEDITERRANEAN FARMERS

✓ Reduction of production costs by 5% thanks to improved WUE, NUE and EUE
✓ 200 agricultural stakeholders trained in resource efficient practices to integrate Resource Efficiency & Circular Economy principles into their businesses
HORTIMED-EXPECTED IMPACTS

IMPROVED RESOURCE EFFICIENCY AND INCREASED CIRCULARITY

✓ Water Use Efficiency-WUE (m3/m2/kg) improved by 15%
✓ Nutrient Use Efficiency-NUE (kg of fertilizer/m2/kg) improved by 10%
✓ Energy Use Efficiency-EUE (Kwh/m2/kg) improved by 10%
✓ Reduction of chemical pesticides use by 5%
✓ Feed Conversion Ratio improved by 10% in IMTA system
✓ Net aquatic species biomass production in IMTA system increased by 15%

REDUCTION OF ENVIRONMENTAL IMPACTS

✓ Reduced pollution from nitrate and phosphorus leaching thanks to precise fertiliser applications
✓ Minimized greenhouse gas emissions thanks to optimized fertiliser applications and minimised energy use
✓ Reduction of chemical pesticides residues in food, soil & water
THANK YOU!

شكرا  Shukraan
Merci  Gracias

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