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SUPROMED project. A way to improve the environmental and economic sustainability of the Mediterranean agro-ecosystems

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INTRODUCTION

Main characteristics of the Mediterranean agroecosystems:

- Water scarcity, drought periods and global warming
- Lack of tools and irrigation services for irrigation requirements
- Low price of harvests and farms profitability
- Excessive use of resources to compensate these shortages



Fig. 1. End-users platform (available in www.supromed.eu)

OBJECTIVES

SUPROMED aims to provide a holistic crop-livestock water management system resilient to climate change in the Mediterranean agro-ecosystem by the:

- 1) Development of an end-user Information Technology platform
- 2) Integration of several models and tools in the end-user's platform
- 3) Application and promotion of regulated deficit irrigation techniques
- 4) Validation of the end-user IT platform in Spain, Lebanon and Tunisia
- 5) Design of a set of good agricultural practices and management techniques
- 6) Results integration into regional, national and international policies

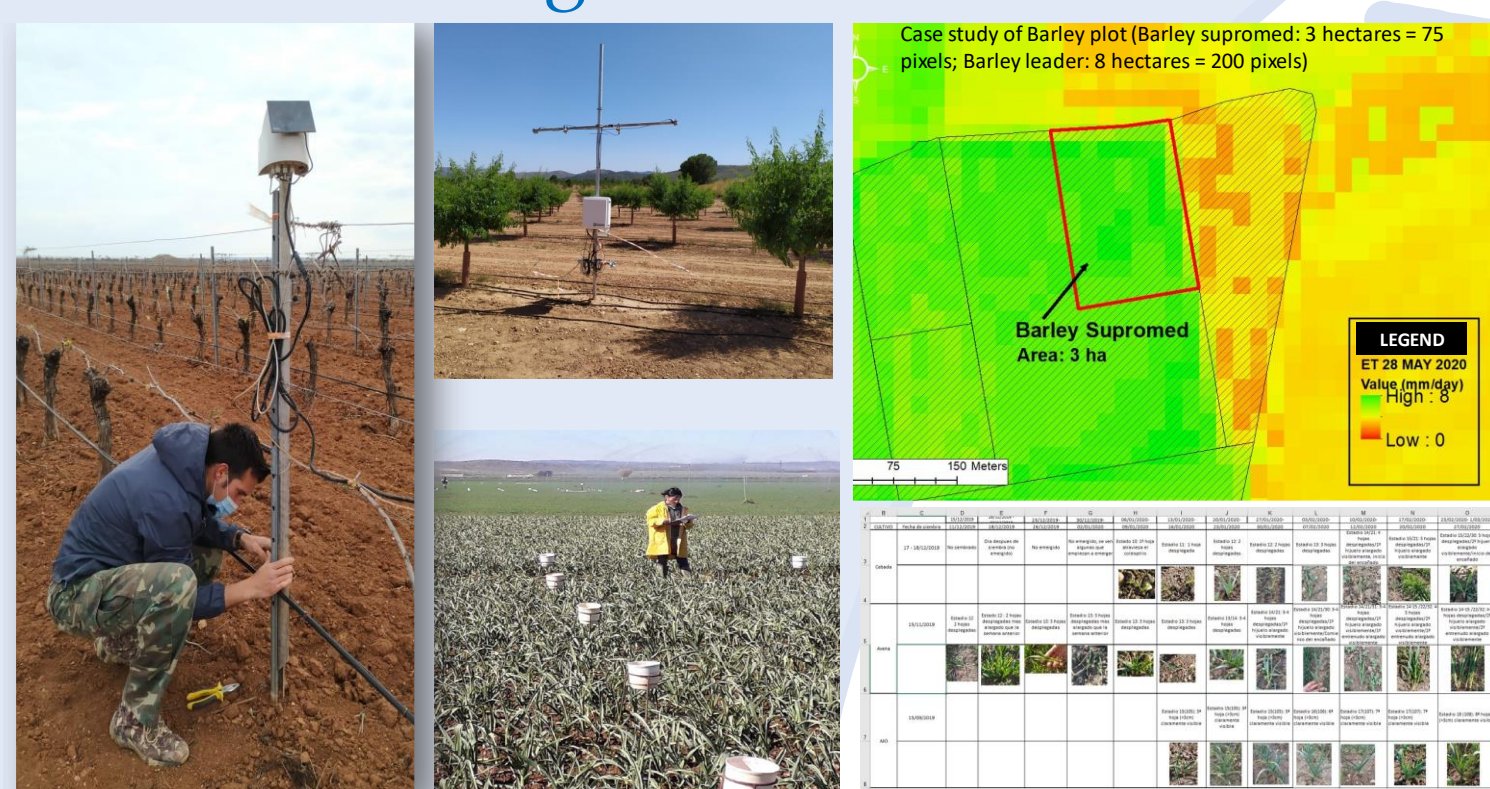


Fig. 2. Monitoring of crops and management of farms

MATERIAL AND METHODS

- Models to be integrated into the platform: MOPECO, IREY, PRESUD, DOPIR, WRF
- Demosites: Eastern Mancha (Spain), Bekaa Valley (Lebanon), Sidi Bouzid (Tunisia)
- Comparison between traditional and proposed by SUPROMED management
- Definition of productivity, economic and environmental indicators
- Training program for promoting the use of the platform and disseminating results
- Socioeconomic analysis and proposal of management policies

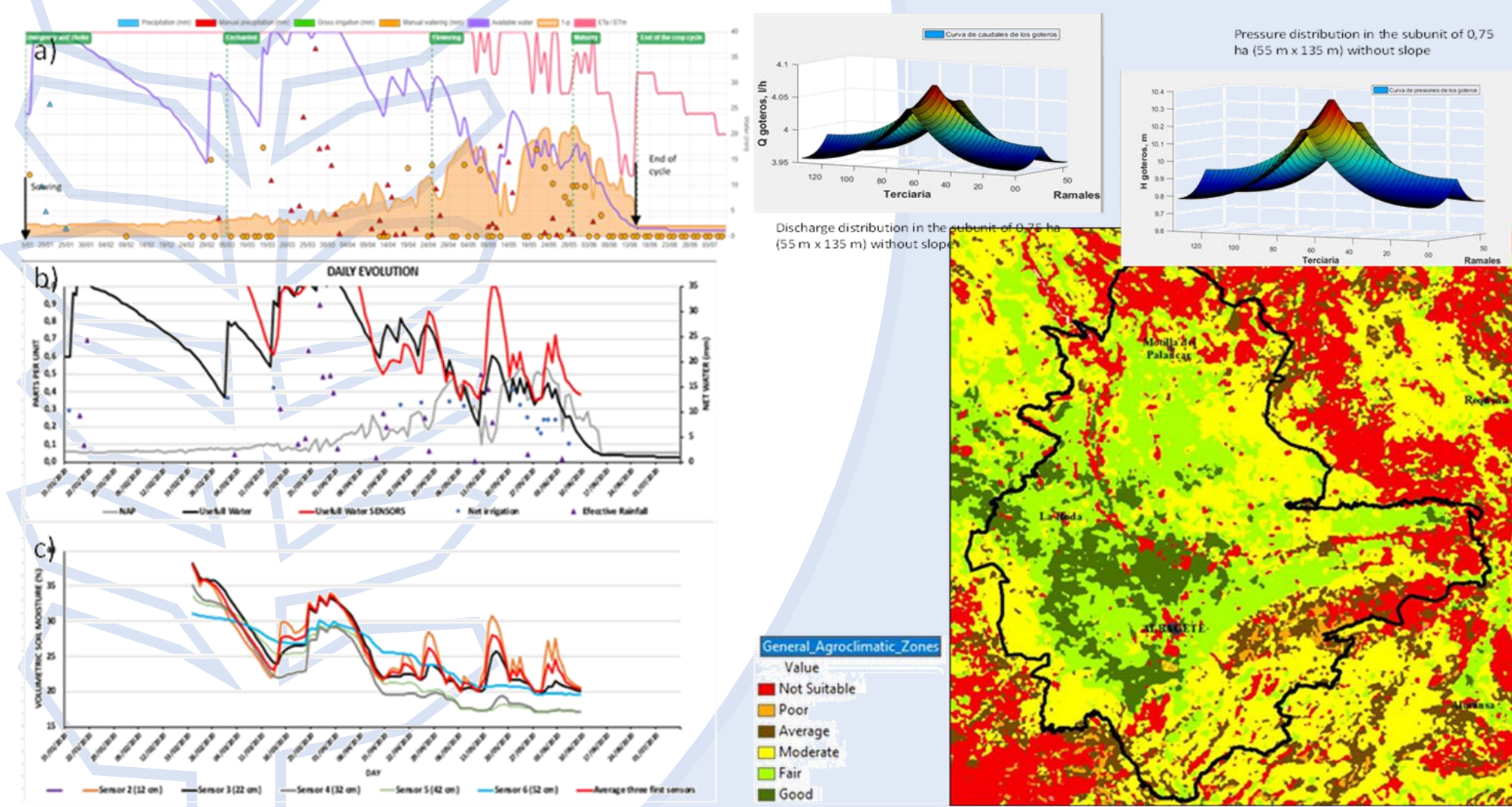


Fig. 3. Validation of the models in the 3 demosite areas (MOPECO; PRESUD; and agroclimatic zoning)

Indicator	SUPROMED	Leader	Average 1	Average 2	Average 3
Yield (kg/ha)	9467	9295	8776	9564	7350
Fertilization (UN/ha)	125	125	123	244	244
Irrigation water (m ³ /ha)	1996	2921	2227	1869	2641
ETa/ETm	0,98	1,00	1,00	0,90	0,90
Total percolation (m ³ /ha)	906	1446	1043	962	1246
Irrigation water percolation (m ³ /ha)	0	194	0	0	93
Profitability (€/ha)	661,01	523,39	743,02	895,34	445,04
Irrigation water productivity (kg/m ³)	4,74	3,18	3,94	5,12	2,78
Irrigation water productivity (€/m ³)	0,17	0,11	0,17	0,23	0,11
Water footprint (m ³ /kg)	906	1446	1043	962	1246

Fig. 4. Indicators comparison between traditional and proposed by SUPROMED management in a barley crop in Spain (SUPROMED shows the results for the plot managed by the research team; Leader is the reference farmer in the area and where SUPROMED plot was placed; Average are other monitored farmers in the area cropping barley).

RESULTS

- After the 2nd year of the project, the results achieved are:
- Development of the web page and the platform (Fig. 1)
 - Monitoring of 31 farms, 14 crops and > 90 plots (Fig. 2)
 - Validation of the models (Fig. 3)
 - Better results in the SUPROMED plots (Fig. 4)
 - Dissemination: >2500 web visits; promotional video; 2100 brochures; Social media (Facebook, LinkedIn, Researchgate...); 17 press releases; 9 papers...
 - Training: 15 meetings; 8 videos & guides (Fig. 5)

ACKNOWLEDGEMENTS

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CONCLUSION It is possible to reach suitable yields and incomes by doing a better use of the resources and decreasing the impact on the environment.



Fig. 5. Demonstration plot, video tutorial for the use of the models, and training course