Kick off meeting
27-29 May 2019

MEDWATERICE
Towards a sustainable water use in Mediterranean rice-based agro-ecosystems

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MEDWATERICE Kick-off Meeting

Milan-Pavia: 27-29 May 2019

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IN THE MEDITERRANEAN AREA

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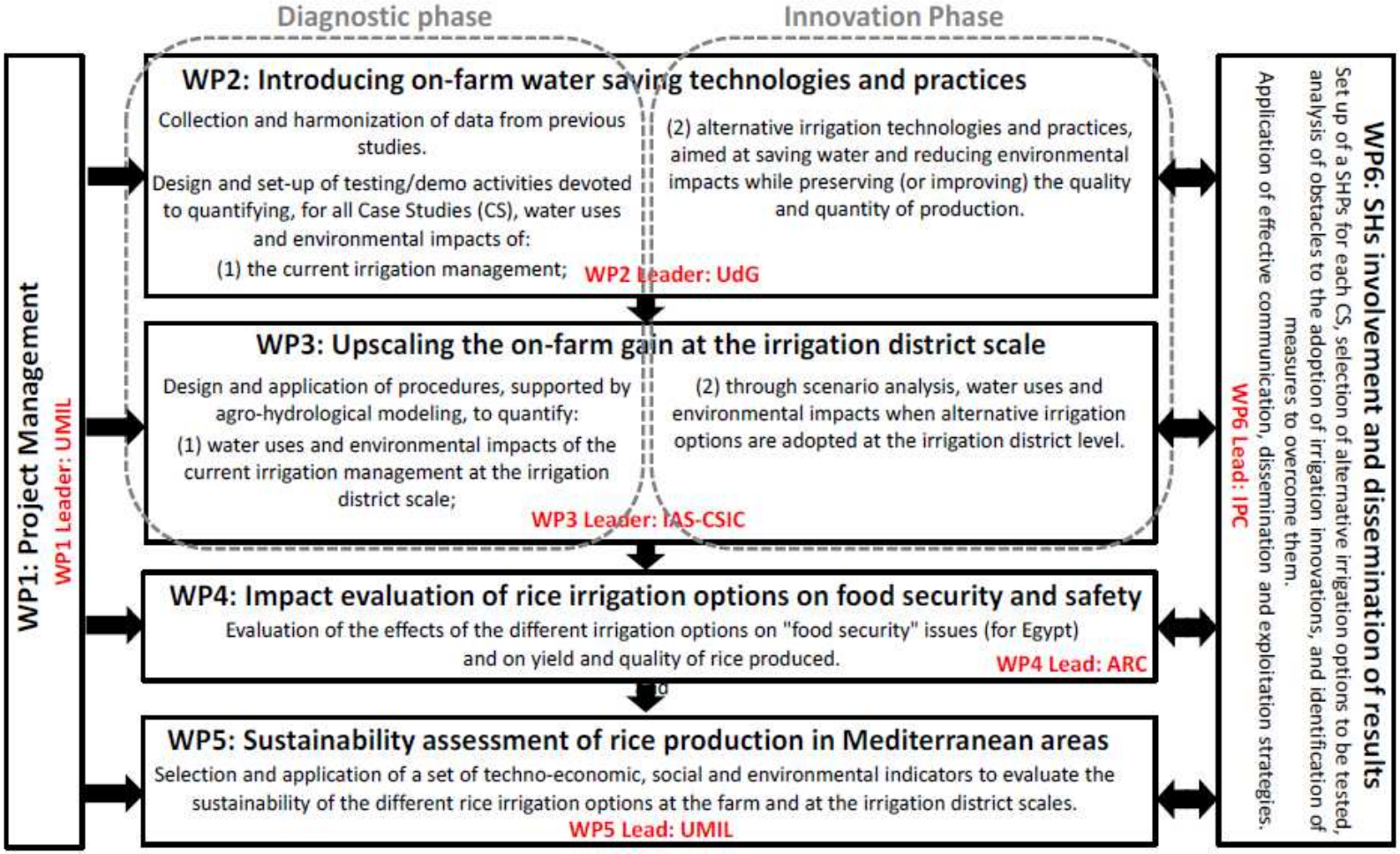
WP2 – Introducing on-farm water saving technologies



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WP2 – Objective

Objective: To select and experiment/demonstrate in pilot farms within the MEDWATERICE partner countries the most promising irrigation technologies and practices to reduce rice water consumption and environmental impacts.

Description of work

WP2 will collect and harmonize existing data on irrigation consumption and environmental impacts of rice cultivation in countries participating in the project, select with the support of the SHPs the most interesting alternative irrigation solutions to solve site-specific problems of the rice sector, experiment/demonstrate the solutions selected, retrieve - from the experimental activities - data useful to assess the overall sustainability of the selected solutions at the farm scale.

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WP2 – Tasks

Collection and harmonization of existing data

Task 2.1 Collect and harmonize existing data on irrigation consumption and environmental impacts of rice cultivation in countries participating in the project [Leader UdG, all project partners participate]

Selection and testing/demonstration of rice irrigation alternatives

Task 2.2 Select irrigation technologies and management options most appropriate to solve problems emerged in each country with the involvement of Stake-Holder Panels (SHPs) (set-up in WP6) [Leader UdG, all project partners participate]

Task 2.3 Test/demonstrate alternative irrigation options (technologies and practices) compared to the continuous flooding (benchmark for Mediterranean countries) in pilot farms within the participating countries. The most appropriate rice varieties and agronomic practices will be adopted to minimize the impacts on yield quantity and quality in each site [Leader UdG, all project partners participate]

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WP2 – Objectives and tasks

Reuse of treated waste-water in rice irrigation

Task 2.4 Focus on the reuse of treated waste water in rice irrigation. Since this irrigation management option is positioned at a lower readiness level (TRL) than the others, a laboratory testing phase will precede the farm experimentation. [Leader IPC, Participant NETAFIM]

Collection of on-farm datasets for sustainability assessment

Task 2.5 Collect at least a minimum dataset for each case-study, including: agro-climatic data, soil physico-chemical properties (including salinity), groundwater level, irrigation water quality, field water balance components (i.e., irrigation inflow and outflow, evapotranspiration), and crop yield. For each case-study these data will be quantified both for the 'benchmark' irrigation management (traditional flooding) and for the explored alternative irrigation options. In tailored case-studies, further aspects will be assessed: nutrient balance, salt balance and other environmental impacts (e.g., water pollution due to the use of pesticides, greenhouse gas emissions). Data collected will be used, together with those collected in WP4 – Task 4, in WP5 [Leader UdG, all project partners participate]

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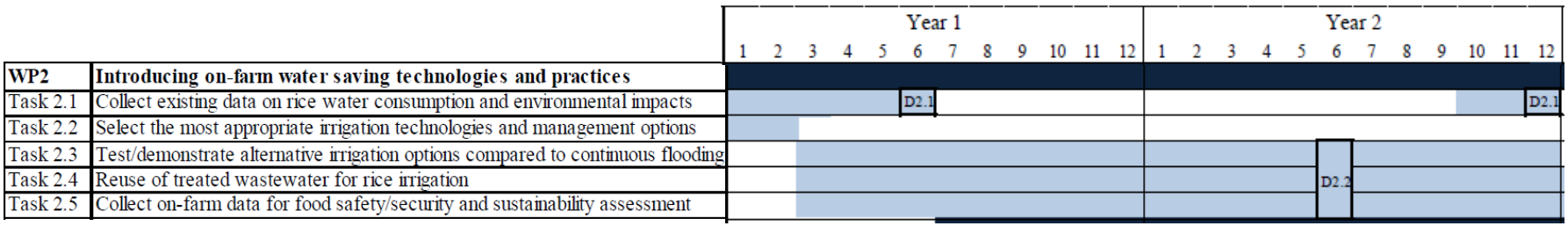
WP2 – Milestones and deliverables. Timings

Milestone number	Milestone name	Related work packages	Due date (in month)	Means of verification
M2.1	Preliminary report on farm-scale test/demonstration activities during the first year (difficulties and correction measures)	2	12	Document available to all project partners

Deliverables

D2.1 Review document containing all the existing data on rice water consumption and environmental impacts in the participating countries [month 6], updated once all data acquired during MEDWATERICE will be available [month 24]

D2.2 Report illustrating the innovative irrigation solutions tested/demonstrated in each case-study and results achieved [mid-term: month 18, final: month 36]



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WP2 – Case Studies and partners

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WP2 – CS 1 (Italy)

Country and location	CS No and spatial scale	CS Leader (in bold) and other participants	Experimental activities for solving critical issues	Data to be measured/collected
Italy (Lomellina area; Pavia)	CS 1 Rice farm	**ENR**, UMIL, UNICATT	• Testing water consumption in the traditional and water saving irrigation systems (experimental ENR farm) • Optimizing soil, irrigation and crop management techniques for each irrigation option (ENR farm) • Testing the effects of the different irrigation options on yield quality (As, Cd) and quantity (ENR farm) • Testing the effects of the different irrigation options on the soil nutrient balance and nitrate leaching (ENR farm) • Testing the effects of the different irrigation options on the fate of two pesticides widely used in rice cropping (ENR farm) • Testing water saving potential, energy consumption and human labor reduction of on-farm water management automation technologies (farm to be selected)	• Irrigation water inflow and outflow and other water balance terms, groundwater level, agro-meteo data (ENR farm) • Crop phenology, LAI, yield quality (As and Cd in the grain) and quantity (ENR farm) • Soil quality (ENR farm) • Nutrient and pesticide concentrations in surface water and groundwater (ENR farm) • Irrigation water inflow and outflow and other water balance terms, groundwater level, agro-meteo data, human labor saving, energy consumption in adopting on-farm water management automation technologies (farm to be selected) • Farm profitability in the actual situation and when adopting irrigation innovations (ENR farm and farm to be selected)

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WP2 – Communication and follow up

Follow up:

- Based on KOM agreements– UdG updates tasks and timings in each CS
- One-to-one - WP leader with each CS leaders
- Quarterly – via Skype / phone / email (Aug, Nov, Feb, May, …)

Follow-up information in shared file with WP leaders and CS leaders.

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WP2 – Deadlines

		Year 1												Year 2											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
WP2	**Introducing on-farm water saving technologies and practices**																								
Task 2.1	Collect existing data on rice water consumption and environmental impacts						D2.1																		D2.1
Task 2.2	Select the most appropriate irrigation technologies and management options																								
Task 2.3	Test/demonstrate alternative irrigation options compared to continuous flooding																								
Task 2.4	Reuse of treated wastewater for rice irrigation																		D2.2						
Task 2.5	Collect on-farm data for food safety/security and sustainability assessment																								

Deliverables:

- Case study leaders
  - → Existing data in each CS – Sep 1st 2019
  - → Individual CS reports on farm/field activities – Dec 15th 2019
- WP leader
  - → Preliminary project report on farm/field activities – Apr 15th 2020

Follow-up information in shared file with WP leaders and CS leaders.

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WP2 – CS 3 (Spain – Guadalquivir marches)

Country and location	CS No and spatial scale	CS Leader (in bold) and other participants	Experimental activities for solving critical issues	Data to be measured/collected
Spain (Guadalquivir marches; Seville)	CS 3 Rice farm	**TEPRO**, IAS-CSIC, NETAFIM	• Testing water consumption in the traditional and water saving irrigation systems (2 farms to be selected) • Testing the effects of the different irrigation options on yield quality (As, Cd) and quantity (2 farms) • Testing the effects of the different irrigation options on soil and water quality (2 farms) • Assessing the possibility to reuse drainage water through pumping it back in the irrigation network (2 farms) • Testing water saving potential, human labor reduction and economic sustainability of on-farm water management automation technologies (2 farms)	• Irrigation water inflow and outflow and other water balance terms, groundwater level, agro-meteo data (2 farms) • Crop phenology, yield quality (As and Cd in the grain) and quantity (2 farms) • Soil quality (2 farms) • Salts and nutrients in water (2 farms) • Farm profitability in the actual situation and adopting irrigation innovations (2 farms)

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WP2 – CS 2 (Spain – Baix Ter)

Country and location	CS No and spatial scale	CS Leader (in bold) and other participants	Experimental activities for solving critical issues	Data to be measured/collected
Spain (Baix Ter area; Pals; Girona)	CS 2 Rice farm	**UdG**, NETAFIM	• Testing water consumption of the traditional and water saving irrigation systems (sub-surface drip irrigation), and their effects on yield quantity and quality (As, Cd) (ADV Arròs de Pals farm) • Determining the evolution of water, salt and nutrient balance (nitrates and phosphates) and water use efficiency in a productive farm irrigated by continuous flooding (Mas Pla farm, 130 ha) • Determine drainage water discharge and quality, to assess the possibility to reuse it through pumping it back in the irrigation network (Mas Pla farm)	• Irrigation water inflow and outflow and other water balance terms for the different irrigation options, groundwater level, agro-meteo data (ADV Arròs de Pals farm and Mas Pla farm) • Soil electrical conductivity, nitrates and phosphates in soil and water (Mas Pla farm) • Crop phenology, LAI and yield quantity and quality (As and Cd) (ADV Arròs de Pals farm and Mas Pla farm) • Inputs applied to crop (ADV Arròs de Pals farm and Mas Pla farm) • Farm profitability in the actual situation and adopting irrigation innovations (ADV Arròs de Pals farm and Mas Pla farm)