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المركز الوطني للبحوث الزراعية
National Agricultural Research Center



Water-efficient Innovative Solutions Portfolio for Enhancing Resilience (WISPER)

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Implemented by Istituto per la Cooperazione Universitaria (ICU) - ITALY

in partnership with

National Agricultural Research Center (NARC) - JORDAN

and

Institut National des Recherches en Génie Rural, Eaux et Forêts (INRGREF) - TUNISIA

OVERALL

Countries involved: **Tunisia and Jordan**

WISPER project works to introduce modern and innovative technologies in the partner countries. These technologies are known to be scarce in partner countries and to contribute to raising the water use efficiency to the optimum level.

Project seeks to introduce modern technologies that save water, while at the same time making sure to introduce low cost technologies to achieve the possibility of acceptance and application by farmers.

WIDER PROGRAM

WISPER is part of a wider program led by ICU in Jordan, Tunisia, Lebanon, Syria and southern Italy (EVE, PRESTo, PROSIM) and financed by various donors: EU, Italian Cooperation Agency and other public bodies and private foundations.

RESULTS

Identified, tested and showcased a portfolio of water-efficient innovative solutions at different maturity stages, that have the potential to be scaled up.

JORDAN

1. TWW Systems
2. Soilless-system prototypes & Fertilizer injector for an existing hydroponic system
3. Water-retention polymer
4. Sub-surface tape irrigation system
5. Water boxes
6. Use of brine (desalination-by-product)

JORDAN - Soilless-system prototypes & Fertilizer injector for an existing hydroponic system



PROS: Simple and “low cost” soilless system prototypes to make this innovation accessible.

3 ways of cultivation: water, volcanic soil and coconut fiber.

Save 30/60% water comparing with traditional cultivations.

JORDAN - Water-retention polymer



PROS: Innovative polymer (pollution free and 100% biodegradable). The polymer may retain water for 4 to 6 weeks, tested in an open field of 1 dun and 240 m² greenhouse.
About 20% water saving in open field, **about 30%** in greenhouse

CONS: Biodegradability level still under verification.

JORDAN - Sub-surface tape irrigation system



PROS: Sub-surface drip irrigation tape system on 1 dunum open field in NARC Deiralla Research Center thus decreasing the evaporation losses of water. **About 30%** water saving.

TUNISIA

1. Improved PV systems for pumping water from private wells with salinity rate between 1,5 and 3 g/L in 4 GDA
2. Agrometeorological stations and sensors
3. Technology to measure and map the variability of soil salinity: CMD mini explorer
4. Experimental greenhouse for recovering rainwater and evapo-transpirated water
5. PV station (100 kW) for pumping treated waste water in SE4 station
6. Experimental study on use of brine (desalination-by-product).

TUNISIA - Improved PV systems for private wells



PROS: Reduces the cost of pumping from the wells by reducing the use of fossil energy thus reducing the environmental hazard and increase farmer incomes.

CONS: Risk of increase of groundwater salinity due to sea water intrusion.

TUNISIA - Agrometeorological stations and sensors



PROS: Agro-meteorological stations measure meteorological data such as temperature, rain, air humidity and are equipped with special sensors such as those for leaf wetness. All data collected by the agrometeorological stations allow estimation of crop evapotranspiration for an accuracy estimation of crop water irrigation requirement.



Soil tillage



TUNISIA - Experimental greenhouse for recovering rainwater and mixing water study



After 1 year assessment, the involved stakeholders asked to install a greenhouse with rainwater collection and mixing water system at the INRGREF station in *Oued Souhil* (Nabeul). This will be useful for crop response tests to different levels of salinity (mixing water study) and will be used for training and demonstration to local farmers and technicians. The greenhouse was installed in July 2023

Thank you!

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