

# Major Recent ICARDA Water & Land Management Research Initiatives in Morocco

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# Soil & Water Research Staff in Morocco

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**Yang Liu – Associate Professor from China seconded to ICARDA**

**Anas Mansouri – Consultant Research Assistant**

**Mohammed Slimani – Research Technician**

**Hiroki Uchida – Incoming M.Sc. Student from Tottori University**

**Saida Boumakrat – Ph.D. student from IAV**

*Claudio Zucca – Senior Land Management and Soil Conservation Specialist*

*Mohammed Karrou – Principal Scientist – Agriculture Water Management*

*Aicha Hammaoui – Research Assistant – Agricultural Water Management*

*Gianni Montanaro – Intern (McGill University)*

*Anais Barisani – Intern (BOKU university)*

# Major Research Activities in Recent Years

- ✓ **Community-based optimization of the management of scarce water resources in agriculture in West Asia and North Africa (AFESD funded)**
- ✓ **Enhancing land & water productivity in mixed production systems (CRP Dryland Systems)**
- ✓ **Programme for the development and dissemination of sustainable irrigation management in olive (OFID and CFC funded)**
- ✓ **Root-zone SOC and TN as affected by DW genotype and management, and silicon effects on drought tolerance of BW genotypes (AFESD funded)**
- ✓ **FAO-RNE Water scarcity initiative**
- ✓ **Understanding of environment x management x genotype interactions in wheat and development of innovative methods of inputs management at different scales (AFESD funded)**
- ✓ **Global Earth observation for integrated water resource assessment (earthH2Observe) (H2020 funded)**
- ✓ **Ultra-Low energy drip irrigation for MENA countries (USAID funded, Partners: MIT and INRA)**

**TOTAL BUDGET: USD 5.5 million**

# Major Achievements

- Morocco was Benchmarks project rainfed research site and supplemental irrigation package was fine-tuned and dissemination in Tadla area
- Olive irrigation management project fine-tuned and disseminated packages for conversion of flood-irrigated olive plantations to deficit drip irrigated plantation in Marrakech region
- At Merchouche station G x E x M experiments were conducted for 4 years to develop recommendations of right cultivar, right soil and nutrient management and right SI for maximizing CWP. Data is being modeled using AquaCrop and DSSAT
- Root zone carbon sequestration potential of different wheat cultivars in different regions of Morocco is being analyzed
- Raised bed planter was introduced and supporting management packages were developed for Tadla region
- Bridging observation data gaps using earth observation sensors and algorithms was applied to Oum Er Rbia watershed
- Ultra-low energy emitters that operate on solar energy were introduced in Beni Mellal, Marrakech and Agadir regions

# Major achievements of 'Ultra-low energy Drip Irrigation for MENA Countries' project

- ✓ MIT GEAR Lab has developed an emitter that operates at 75% lower activation pressure than conventional emitters
- ✓ These emitters can reduce capital cost of off-grid irrigation system by 27%
- ✓ Trials are being conducted in Beni Mellal, Marrakech and Agadir
- ✓ Three year research results demonstrate that there was 72% saving of energy for same quantity of water applied
- ✓ Uniformity of MIT emitters was over 80% (ASABE standard is 75%)
- ✓ A Farmer Field Day was conducted which was attended by USAID staff and was covered by local media
- ✓ Several MSc and PhD students from MIT and some from Morocco are conducting research in the project
- ✓ The project has been appreciated at USAID HQ level and has received a 3-year extension



# Upcoming Major Research and Dissemination Activities

- ✓ Starting new 3-year project '**Tuning water delivery to evapotranspiration using ultra-low energy drip irrigation and commercializing it in the MENA region**' with INRA and MIT
- ✓ Proposal to conduct special session at '**5<sup>th</sup> African Regional Conference on Irrigation and Drainage**' in March, 2020 at Marrakech. IAV and INRA invited to co-organize and focus on research for addressing Green Morocco Plan targets
- ✓ Proposal on '**Advancing the science of desalination for drip irrigation: utilizing renewable-powered electro dialysis to reduce water cost and improve crop productivity**' with MIT, INRA and UNL under consideration for funding by US NSF
- ✓ Solar-powered irrigation project being developed for Morocco for funding by Qatar and BMGF



Thank You

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