MIRRA

Methods for Irrigation and Agriculture

لتطوير أساليب الري والزراعة

NEWSLETTER

FEBRUARY 2026 | ISSUE NO.34

TABLE OF CONTENTS

OUTREACH AND DISSEMINATION

Cooking for Change: How the first NUSTALGIC Recipe Day Connects Food, Climate Resilience, and Gender Equality

Picture 1: Sewar Saleh from MIRRA welcomes the attendees (on the right), with Chef Khadija, owner of Khadija Restaurant, in the center, and Dr. Samer Talozi on the left, at the opening of Recipe Day.

MIRRA brought together community members for a vibrant and interactive Recipe Day under the NUSTALGIC Project—an initiative that goes beyond cooking to create dialogue, reflection, and knowledge exchange around food, sustainability, and social norms.

he day focused on three Neglected and Underutilized Species (NUS): green fava beans, chickpeas, and barley. Participants baked barley bread, engaged in a live cooking station to make chickpea salad, and followed a guided video to prepare green fava bean maqlouba before sharing the final dish together.

Picture 2: Interactive participation from attendees during the barley bread preparation activity, part of Recipe Day's initiatives to promote the use of local crops.

For many participants, this was more than a culinary activity. Around 15% tasted green fava bean maqlouba for the first time highlighting how certain traditional crops, despite their traditional, nutritional and environmental value, have gradually disappeared from daily diets. This moment sparked open discussions about food choices, heritage crops, and the importance of reviving climate-resilient species

Picture 3: Chef Saber from Khadija Restaurant preparing chickpea salad.

As the aroma of freshly baked barley bread filled the space, conversations naturally evolved toward gender roles in cooking. Participants shared diverse and thoughtful reflections, emphasizing that cooking is a skill, a passion, and a shared responsibility rather than a role defined by gender. The discussion created a safe and engaging environment to question traditional norms and promote more equitable domestic practices—one of the core social dimensions addressed by NUSTALGIC.

Beyond the kitchen, the conversation extended to agriculture and sustainability. Participants highlighted the environmental benefits of legumes and barley, including their role in improving soil fertility, enhancing nitrogen fixation, reducing the need for chemical inputs, and increasing resilience under water-scarce conditions. Local traditions, such as barley-based beverages and heritage recipes, were also shared, reinforcing the cultural value of these crops.

Picture 4: A lively and interactive atmosphere prevailed during the recipe day, as participants engaged in conversation

Recipe Day is a key engagement activity under NUSTALGIC's multi-actor approach, designed to connect consumers with farmers, researchers, and local food traditions. Through these interactive sessions, the project aims to increase awareness of NUS diets, promote behavior change toward more sustainable and nutritious food choices, and encourage more gender-equitable norms within households.

Picture 5: Green faba bean Maqluba – one of the special recipes presented during Recipe Day.

Printed recipe brochures were distributed at the event, enabling participants to recreate the dishes at home and extend the impact of the activity within their families and communities—transforming a single cooking day into a ripple effect of awareness, experimentation, and change.

Picture 6: A group photo from our Recipe Day under the NUSTALGIC project.

We would like to extend our heartfelt thanks to Khadija Restaurant for their generous support and collaboration in making Recipe Day a memorable experience.

مطعم خديجة

@KHADIJA_RESTAURANTJO

AGRO-TECHNOLOGY TRANSFER

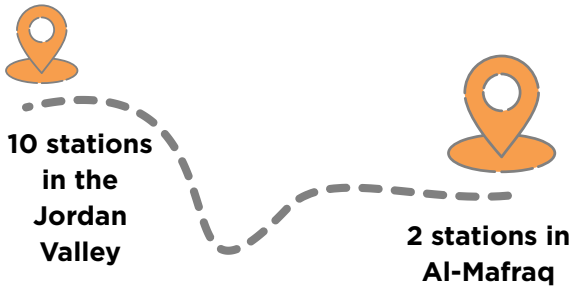
Advancing Smart Irrigation in Jordan

Water scarcity is not a future challenge in Jordan it is a present reality. Improving irrigation efficiency is no longer optional; it is essential for sustaining agricultural productivity while protecting limited water resources.

Doktar (https://www.doktar.com/en/) and MIRRA has taken a significant step toward strengthening data-driven irrigation management across key agricultural areas in Jordan.

Agro-Technology Transfer

During the past period, MIRRA successfully completed the deployment of 12 Filiz Standard sensor stations across strategic farming locations:



These stations now provide real-time field-level insights on soil moisture and microclimatic conditions, enabling farmers to make informed irrigation decisions based on actual crop and soil needs rather than fixed schedules.

The Jordan Valley sites represent high-value irrigated agriculture under increasing water stress, while Al-Mafraq installations support semi-arid production systems where precise irrigation timing is critical. This geographic distribution ensures the program addresses diverse agro-climatic conditions within the country.

Picture 1: Installation of Filiz Standard sensor station in the Jordan Valley, Hassan Al-Habli farm. The station delivers real-time soil moisture and microclimate data, enabling irrigation decisions based on measured field conditions rather than fixed schedules.

Turning Data into Practical Decisions

The Filiz sensor stations feed directly into a digital platform, translating raw environmental measurements into actionable recommendations. Farmers can now monitor soil moisture trends at root depth, track local weather conditions, and adjust irrigation accordingly.

This shift from assumption-based irrigation to measurement-based irrigation is fundamental. Over-irrigation increases costs and stresses water resources; under-irrigation reduces yields. Precision data bridges that gap.

The objective is not technology for its own sake — it is smarter water use, improved crop performance, and stronger climate resilience.

Picture 2: Deployment of Filiz Standard sensor station in Al-Mafraq, at Sultan Al-Sror, expanding precision irrigation monitoring into semi-arid production systems where water efficiency is critical for crop sustainability.

Picture 3: On-site onboarding and Doktar App installation, guiding Anas Abo-Sharefeh, farmer from the JV, through real-time field monitoring and irrigation insights directly from his mobile device.

Building Farmer Capacity

Technology adoption only succeeds when users are confident and capable.

On 17 February 2026, MIRRA organized a dedicated training workshop in the Northern Jordan Valley. The session brought together the 20 farmers interested in digital agricultural technologies.

The workshop combined:

Practical water management concepts	Open technical discussion with farmers
Hands-on introduction to the Doktar platform	Field-based demonstration of sensor functionality

The interactive format allowed farmers to see how real-time data connects directly to irrigation decisions in their own fields. Engagement was strong, and discussions reflected genuine interest in optimizing water use through measurable indicators.

Picture 4: Hands-on training session with participating farmers in the Northern Jordan Valley, introducing the Doktar platform and demonstrating how field data translates into practical irrigation decisions.

Picture 5: Figure 5: Participating farmers and project team at the close of the Doktar workshop in the Northern Jordan Valley, reinforcing a shared commitment to smarter water management and sustainable agriculture.

RESEARCH AND DEVELOPMENT

Mitigating Water Salinity in the Jordan Valley: Effectiveness of New Electronic Water Treatment

Research by MIRRA

Water salinity is a major challenge for Jordanian farmers in the Jordan Valley. MIRRA's research experiment shows promising results for technological application of electronic water treatment in irrigation systems using high-salinity water.

Advances in Agriculture

WILEY

RESEARCH ARTICLE OPEN ACCESS

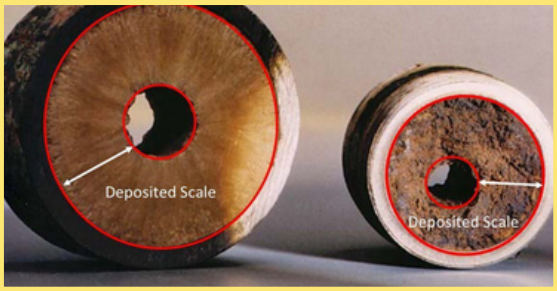
Mitigating Water Salinity in the Jordan Valley: Experimental Evidence for the Effectiveness of Electronic Water Treatment on Irrigation Water Quality and Crop Productivity

Samer Talozi[1] | Ammar Namarneh[2] | William Thompson[2] | Sewar Salah[2]

[1]Civil Engineering Department, Faculty of Engineering, Jordan University of Science and Technology, Irbid 22110, Jordan | [2]Methods for Irrigation and Agriculture, Amman 11194, Jordan

The Problem:

Mineral Buildup in Irrigation Pipelines



Picture 1: Mineral buildup in slice of water pipe

Picture 2: Buildup on a sink faucet

Background:

Jordan is recognized as the second-most most water scarce nations in the world. To mitigate this crisis, reusing treated waste water has been proposed as a largely untapped possibility for use in irrigation. However, the high concentration of salts in treated waste water pose a significant challenge. Established desalination approaches such as reverse osmosis and electrodialysis are unfeasible for Jordan due to high costs and lack of access to coastline. Thus, low-capital, modular solutions are imperative.

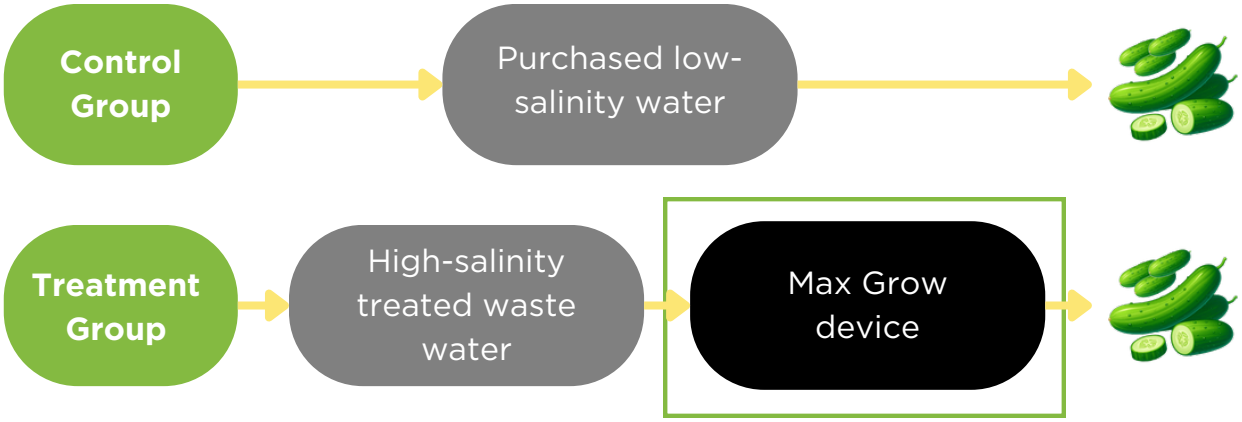
The Solution:

Electronic Water Treatment (EWT)

EWT technology uses radio wave transmissions to alter the electric charge of dissolved ions. This process changes the behavior of salt compounds, preventing build-up of minerals within pipes.

Picture 3: Max Grow device reduces mineral buildup

Experimental Design:



Evaluation Criteria:

- Water salinity
- Water pH levels
- Plant length
- Stem thickness
- Yield

Picture 4: Greenhouse setup

Results:

Positive Impact of EWT on Crops

Crops (cucumbers) irrigated with EW-treated high-salinity water had similar, or higher, plant length and yield than those under low-salinity purchased water. Additionally, measured water salinity was observed to decrease by 6 to 24% before and after treatment.

Overall, statistical analysis shows positive effects on crop growth, overcoming the adverse affects of utilizing highly saline treated waste water for irrigation.

Practical Applications:

Water salinity is among the most significant threats to global agriculture. EWT does not physically remove salt from water. However, EWT reduces mineral buildup due to high salination in irrigation pipes and soil. It is also easy to install and can be adopted inline. Thus, for farmers simply looking to maintain or improve crop performance while avoiding the cost of purchasing low-salinity water, this technology offers a lower-cost alternative to small-scale desalination. EWT technology is applicable across arid and semiarid regions suffering from high salination levels, and provides a pathway for reusing industrial waste water for agriculture.

Scan the QR code below to access MIRRA's research paper:

Welcome

Introducing MIRRA's Newest Intern: Priya McNamara joins our Team!

Hello! My name is Priya McNamara, and I am a senior at Purdue University studying Computer Science as well as Arabic and Political Science. For my final semester I am studying abroad in Amman, Jordan, where I have the amazing opportunity to intern at MIRRA.

Everyone at MIRRA has been incredibly kind and welcoming and I am excited to work with them. Since joining the team, I have completed a brief report highlighting some of the research MIRRA has done. Moving forward I will be working on the website, writing policy briefs, and implementing task management tools to aid staff members in their work furthering MIRRA's mission.

Through this internship I will learn more about the issues Jordan is currently facing in regards to food, water, and agriculture, and I hope to help MIRRA continue to make positive impact.

https://mirra-jo.org
info@mirra-jo.org
941454 Amman 11194 Jordan
Methods for Irrigation and Agriculture - MIRRA
7 Abdelaziz Al-Thaalibi Street, Shmeisani, Amman, Jordan.

MIRRA
Methods for Irrigation and Agriculture
لتطوير أساليب الري والزراعة