



Methods for Irrigation and Agriculture

MIRRA and Water Solutions International (WSI) Collaborate to Transform Public Opinion on Decentralized Waste/greywater Treatment and Reuse within Schools as Part of the Water Wise Schools Project.



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A Day at the Rihab Municipality Public Park: MIRRA and AVSI-Jordan Rehabilitate Parks in Mafraq and Create Income Opportunities for Locals and Syrian Refugees.



People for development

Q&A with MIRRA's Director, Samer Talози: "We Need to Make Serious Efforts to Shift Agriculture Towards a More Sustainable Path".



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MIRRA, with Support from Nuffic, launched a New Apprenticeship Program in Climate-Smart-Agriculture that will Benefit Vulnerable Jordanians and Syrian Refugees.



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MIRRA and Water Solutions International (WSI) Collaborate to Transform Public Opinion on Decentralized Waste/greywater Treatment and Reuse within Schools as Part of the Water Wise Schools Project.

By Fana Cisse and Samer Talози

After the successful WinS (WaSH in Schools) initiative, MIRRA launched in October 2022 a sister project: Water Wise Schools. In partnership with Water Solutions International (WSI), the new program will train and educate public school teachers and staff throughout the country on climate-and-water-smart strategies including waste/greywater treatment, rainwater



MIRRA's Ammar Namarneh discussing greywater treatment and reuse at a school in north Jordan

harvesting, and safe reuse within schools. The potential of wastewater treatment and reuse to save fresh water resources—especially in a water-scarce country like Jordan—is well known; however, for a large part of the Jordanian population, reuse of treated wastewater still holds a negative connotation.

During the past 2 months, to fight the lack of awareness and knowledge behind this restraint, MIRRA organized several informational workshops through the Water Wise Schools project for nearly 80 Jordanian public teachers around greywater and wastewater treatment and reuse, as well as rainwater harvesting. With various outreach means including films, social media outlets, blog articles, printed and digital publications, the initiative aims to reach and

educate 10,000 stakeholders on the said topics during this year. Teachers from 10 schools were selected, four schools from the north of the country, from the middle and two from the south. Ammar Namarneh, a Civil and Environmental Engineer at MIRRA, held workshops at these schools. Eng. Ammar expressed that although preparing for the workshops was fairly manageable, the challenge was **“to deliver this knowledge in an understandable way for all attendees”**. However, he disclosed that only after running these workshops, was he able to realize the full extent of the program’s impact. **“A good number of teachers [didn’t] know anything about these systems,”** he recalled, referring to greywater, wastewater, and/or wastewater treatment and reuse systems more generally.

For Eng. Ammar and MIRRA, education providers are social influencers. **“Arming school teachers with knowledge around water reuse strategies and the different ways to adapt to climate change is therefore an important step towards helping Jordanian populations, young and old, embrace these much-needed practices,”** Ammar added.



School teachers during a training workshop on greywater treatment and reuse.

A Day at the Rihab Municipality Public Park: MIRRA and AVSI-Jordan Rehabilitate Parks in Mafraq and Create Income Opportunities for Locals and Syrian Refugees.

By Fana Cisse and Samer Talози

MIRRA has kept active in the Governorate of Mafraq in the north east of Jordan. Mafraq has witnessed a surge in population after the influx of Syrian refugees. This project, in partnership with the AVSI Foundation in Jordan, rehabilitates the public parks in two towns within Mafraq, Rihab and Djeineh, by planting new shrubs, herbs, and trees, and by establishing a community garden. The initiative sounded exciting, so I decided to join Leen Al Ramahi, an Agricultural Engineer and Project Assistant at MIRRA, for a field day at the Rihab Park. Leen has been in charge of designing the landscape of the two parks, selecting suitable plant types, designing the irrigation system, and creating a training program about planting and irrigation techniques.

By the time I arrived, work had already begun. In little groups, we dug holes, planted trees, staked them to support upright standing, and attached ribbons. An extended hose helped us water. Rows of rosemary and lavender stood on the side, about to be planted. Later, Leen explained that most of the crops chosen are well-adapted to dry environments.

While new trees and shrubs were planted in both public parks, the Rihab Park will additionally benefit from a community garden setup. In raised garden beds owned by women from the neighborhood, multiple herbs will be tended: parsley, thyme, sage and basil. After harvest, the women are able to sell these and make profit. As well as developing this long-term income path, this project also created short-term job opportunities by hiring workers for cash, which develop skills that can improve employability. The day I visited, most

of the workers on the site were women (locals and Syrian refugees). They had previously participated in the in-person training prepared and facilitated by MIRRA. This was the best part for Leen: **“showing the women how to perform the different tasks and hearing their positive feedback was a rewarding experience”** Leen told me. **“It was a nice time...I loved them!”** she added, smiling.

So far, many areas within the two public parks have already been cultivated and the irrigation system will soon be installed. The project will be completed in March, as construction work still goes on for now in some sections of the parks.



Community member from Rehab, Mafraq are participating in tree planting and the creation of the community garden at the Rehab Municipality public park

Q&A with MIRRA's Director, Samer Taloz: "We Need to Make Serious Efforts to Shift Agriculture Towards a More Sustainable Path".

MIRRA's director speaks on the organization's involvement in a new agroecology initiative in Al Azraq; north east of Jordan with financial support from UNDP.

By Fana Cisse with Samer Taloz

Optimally working with nature everywhere, not against it: perhaps a representative slogan of Agroecology, a holistic and contextual approach to building strong and sustainable food and agricultural systems. MIRRA and the United Nations Development Programme (UNDP)–Small Grant Program SGP have been working on introducing such agroecological practices to farmers in Azraq as part of their project **"Enhancing Food Security through Piloting Agroecology Practices and Capacity Building."**

Azraq is a district located in the north eastern desert of Jordan, Al Azraq is a rural area with a population of about 12,500 people. Farmers in Al Azraq struggle with not only a dry environment and the impacts of climate change, but also depletion and salinization of groundwater resources, among others. Agroecological practices might be key to restoring soil health,



MIRRA's staff during two different workshops with small farmers in the Azraq area.

improving soil water retention, and hence achieving a more efficient use of water resources and a more resilient agriculture system.

We spoke with Dr. Samer Taloz, Irrigation and Water Resources Engineer and MIRRA's director, about the farming situation in Al Azraq and how MIRRA and UNDP have been working to introduce agroecological practices to farmers in the area.

Fana Cisse: What is the project about? And what does it mean to MIRRA?

Samer Taloz: The project tackles two main issues, sustainability of agriculture within an

arid environment subject to the stressors of climate change, and the livelihood of small farm holders in such regions. In this case, the focus is on the Azraq farming community, which makes the initiative even more significant because of the fragile groundwater ecosystem in that area. Groundwater levels have been on a continual



decline for the past 3 decades due to human activities. For MIRRA, this presents an urgent situation that must be tackled: it is important for us to direct agricultural activities towards a more sustainable path that serves the needs of the communities and minimizes harm to the surrounding ecosystems. Therefore, this is a unique opportunity for MIRRA to contribute its knowledge and expertise in such a region.

FC: What has MIRRA achieved so far?

ST: This is a small-scale project, with a small-size budget, but thus far we were able to organize 2 workshops with small farmers in the early stages of the project, conduct several meetings with various stakeholders in Azraq, survey 19 farms, conduct water audits at 21 farms, and pilot 4 agroecological practices at 4 small farms.

The workshops and meetings were designed to understand the challenges that small farmers in Azraq are facing. The surveys were meant to create a database of small farms in Azraq and relevant information including common agricultural practices and predominant cropping patterns. As for the water audits, they were designed to zoom in on the on-farm water management practices, and highlight aspects where intervention might be needed to conserve the precious groundwater resources, increase irrigation efficiency and increase water

productivity.

FC: What is yet to come?

ST: Our 4 pilot studies are currently running and will continue till the end of January 2023. For the meantime, we are gearing up for a number of field days at the 4 pilot farms to disseminate pilot results to the larger farming community in Azraq.

FC: Thank you for your time, Samer. Any final words for us?

ST: Yes. Climate change, groundwater depletion, groundwater and soil salinization, overuse of chemicals in agriculture, and the tendency of farmers towards mono-cropping over the years have created a difficult situation for farming in Azraq. If we combine this with population growth and the increasing demand for food, we realize that we need to make serious efforts towards shifting agriculture towards a more sustainable path; one that adopts relevant agroecological practices.

MIRRA, with Support from Nuffic, launched a New Apprenticeship Program in Climate-Smart-Agriculture that will Benefit Vulnerable Jordanians and Syrian Refugees.

By Samer Talози and Timothy Purvis.

MIRRA is launching a new apprenticeship program with support from Nuffic (The Dutch Organisation for Internationalisation in Education) under the EDU-Syria Initiative. This program will train 40 vulnerable youth from the age of 18 to 28, made up of underprivileged Jordanians and Syrian Refugees, on climate-smart agriculture and agripreneurship". More than 100 hours of hands-on training will be delivered by MIRRA and our partner,

the Applied Science University (ASU), to meet the



demand for skilled agricultural workers and skilled farm managers. Participants will follow the training courses, and will have an opportunity to complete an



apprenticeship. This pairing of trainings and applied work will allow for technical and personal skill development. After completion of the course, participants will be prepared to support the local agricultural sector in high-tech and sustainable methods, or start their own enterprises.

The training courses are twofold covering technical and soft skills. The technical track covers both conventional agriculture and soilless agriculture. The participants will learn the principles of on-farm irrigation water management, calculating irrigation water requirements, designing drip irrigation systems, and formulating irrigation schedules – all while taking into account changing climate patterns and varying water qualities. This track is designed to enable the participants to become professional "Drip Irrigation Systems Technicians". This track will enable them to design, install, operate, maintain, and monitor drip irrigation systems, including all other associated components such as filters, fertigation units, pumps, irrigation controllers, pressure gauges, and emission devices. As "Soilless Agriculture Systems Technicians", the participants will learn how to design, operate, and monitor controlled environment greenhouse soilless agriculture systems including fertigation systems and climate control within a greenhouse. This vocational training program is divided into two main parts. The first is theoretical. The second is a hands-on apprenticeship at MIRRA's Climate Smart Farm in the Jordan Valley.

The soft skills track will be executed by the ASU and will cover various topics including: Social Media, Graphic Design, English, and Computer skills.

The 40 participants in this program have been selected, and we are excited to begin trainings in early 2023.

Thank you to our outgoing intern, Fana Cisse

MIRRA is sad to say goodbye to Fana Cisse, who has been with the team since September 2022. Fana joined as an intern while taking Arabic courses at the CIEE (Council on International Education and Exchange) program here in Amman. Fana contributed to newsletter segments, media posts, technical writing, and project support over the past four months. Fana also volunteered with MIRRA, planting trees with community members around Jordan. She will be returning to her studies in Biology at Davidson College in North Carolina, USA! Thank you for all your hard work, Fana!



Left to Right

Timothy Purvis, Leen Al Ramahi, Fana Cisse, Samer Talози, Majed Al Arqan, Ammar Namarneh, Khalil Bany Mustafa

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