

MIRRA

Methods for Irrigation and Agriculture

Every Drop of Water Counts”: MIRRA and the Applied Science University Supporting Syrian Refugee Women in Ramtha Adapt to Water Scarcity.



MIRRA and AIMPLAS in Partnership with PIC, the Packaging Industries Company, Collaborate to Pilot and Integrate Innovative Natural-based Biodegradable Plastic Mulch in the Jordan Valley.



MIRRA and AVSI Work Towards the Development of Vulnerable Communities in Southern Jordan and the Creation of Green Job Opportunities



People for development

“Every Drop of Water Counts”: MIRRA and the Applied Science University are Supporting Syrian Refugee Women in Ramtha Adapt to Water Scarcity“

Samer Talози and Ammar Namarneh

MIRRA continues its work on the project “Empowerment of Syrian Refugees and Capacity Development in Greywater Treatment and Reuse in Agriculture”. Our target group in this project is a group of vulnerable female Syrian refugees living together in one apartment building consisting of 16 apartments in the small town of Ramtha in north Jordan. According to the United Nations High Commissioner for Refugees (UNHCR), Jordan currently hosts 660,892 registered Syrian refugees (with a comparable number of unregistered refugees). 30% of Ramtha’s current population is comprised of Syrian refugees.



This project aims to train, support and build the capacity and skills of a group of vulnerable Syrian refugee widows in greywater treatment and treated greywater reuse in agriculture using drip irrigation. For more, you can read the earlier article about this initiative in our February newsletter. Since then, MIRRA inspected and assessed the plumbing conditions at the residence building hosting the vulnerable group of Syrian refugee women, separated greywater into designated lines and a collection tank, assessed the quality of greywater, designed a greywater treatment system accordingly, and in line with the Jordanian standard. The greywater treatment system was then installed, tested, and training was provided to the residents on its simple operation, maintenance and troubleshooting routine.

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The greywater treatment system installed on site, which consists of physical and chemical treatment stages.

MIRRA's greywater treatment system consists of physical and chemical treatment stages. The physical treatment involves filtering out particles from water using a mesh membrane. This treatment is applicable to filter the suspended solid and reduce the turbidity. Chemical treatment is adding chemicals into the water to neutralize the bacteria through salt. Chemical treatment also involves the coagulation process.

Coagulation is accumulating the bacteria to increase their size and filter them out using physical treatment. In the city of Ramtha, two tanks with a capacity of 50 liters each were added to supply the system with the necessary chemicals, one designated for adding chlorine and the other for adding aluminum sulfate.

Now, a decent volume of treated greywater is available daily for irrigation on-site; reducing the dependency on fresh water. Another saving will result from reduced quantities of wastewater flowing into the cesspit, which is when filled is pumped out at a high cost.

The ultimate goal of this project is to empower this vulnerable females group with the technical skills that supports their livelihood, conserve fresh water resources, and produce food. In the following newsletter, we will report on the activities related to the reuse of treated greywater in irrigation. Stay tuned!



Training on the greywater treatment system operation, maintenance and troubleshooting.

MIRRA and AIMPLAS in Partnership with PIC, the Packing Industries Company, Collaborate to Pilot and Integrate Innovative Natural-based Biodegradable Plastic Mulch in the Jordan Valley

Samer Talози and Ammar Namarneh

MIRRA and AIMPLAS – Plastics Technology Centre in Spain with the participation of PIC – the Packing Industries Company, a private company in Jordan that specializes in manufacturing, converting and printing flexible packaging material of premium quality, are working together under the current PRIMA-funded project titled: “Improvement of Mediterranean greenhouses performance using innovative plastic materials, natural additives and novelty irrigation technologies (AZMUD)”, which also includes partners from Spain, Turkey, and Egypt, and aims to increase the yields and reduce the costs of greenhouses in the Mediterranean region by incorporating innovative technologies.



Remains of plastic mulch after the end of a growing season at one farm in the Jordan Valley



Farm labor removing plastic mulch after the end of a growing season at one farm in the Jordan Valley – a slow and costly process

Typical plastic mulch films currently used in farms in the Jordan Valley have a very labor-intensive removal process, which is costly and usually not very successful as it leaves a sizeable part of the plastic in the soil in small pieces. These plastic pieces become further fragmented during the tillage in the following season and contribute to soil pollution with micro-plastics. Even more, collected plastic mulch is piled and burned on the side of agricultural roads and/or farm edges. Thus, contributing to air pollution, nuisance, and bad aesthetics, because it does not burn completely.

The biodegradable plastic film that MIRRA is currently piloting offers a solution to the above problems. On one hand, it is manufactured of natural products and thus is compostable and can be added to compost mixes. Any remaining small pieces in the soil will degrade overtime (at least 90% of the organic material will be converted to CO₂ within 24 months).



Piles of partially-burned plastic mulch at the side of a road in the Jordan Valley – a very common scenery!

The new innovative plastic mulch is currently being piloted at MIRRA's Climate-Smart Farm in the Jordan Valley and at our project partner farms in Spain and Egypt. Different film samples will be collected during the next several months to monitor the mechanical properties and assess their stability and degradability under different temperatures and radiation levels. Other indicators of the performance of the new mulch that are being monitored are crop development and growth, soil moisture content and weed growth in comparison with conventional plastic mulch. This activity is part of the PRIMA-funded AZMUD project (www.azmud.eu).



Field comparison trial between the biodegradable plastic mulch (left) and the conventional plastic mulch (right) at MIRRA's experimental farm in the Jordan Valley.

MIRRA and AVSI Work Towards the Development of Vulnerable Communities in Southern Jordan and the Creation of Green Job Opportunities

Mahmoud Abuhussein

Through the project “Support for Employment and Entrepreneurship in the Cultural, Agricultural and Tourism Heritage Chain in the Governorates of Mafrqa, Ma’an and Aqaba”, MIRRA implemented a training program targeting member of Al-Quweira community in southern Jordan. The training program, which included theoretical and practical sessions, focused on building capacities in greenhouse farming practices including soil-mix preparation, drip irrigation systems installation, operation and maintenance, cultivation of

leafy vegetables, operating a simple fertigation system, and operating the cooling system of the greenhouse.

The training program benefited 25 women and men from Quweirah. The community members were able to practice and have a hands-on experience in two greenhouses that MIRRA provided, with funds from AVSI, to the community as part of this project. The community’s first choice of a crop was leafy vegetables, which are not readily available in that remote area, and are usually transported all the way from Amman.

Furthermore, MIRRA provided the community with training on small projects planning and conceptualization. And evaluated the knowledge and skills of the beneficiaries of this program before the start of the training program, and also after the end of the program. The evaluation results indicated that the knowledge and skill of the trainees have increased positively and significantly compared to what they were in the past, which qualifies them to invest this knowledge,



The start of the training program on “small projects management and entrepreneurship” for youth from Qweirah, southern Jordan.



Members of the community from Qweirah, southern Jordan are preparing the soil mix inside the temperature-controlled greenhouse; this will later be planted with leafy vegetables.

whether by finding job opportunities in similar domains or starting their small projects. This initiative aligns with the national vision of Jordan for improving food security, reducing unemployment, combating desertification, and making the best practices using water through efficient irrigation techniques.

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