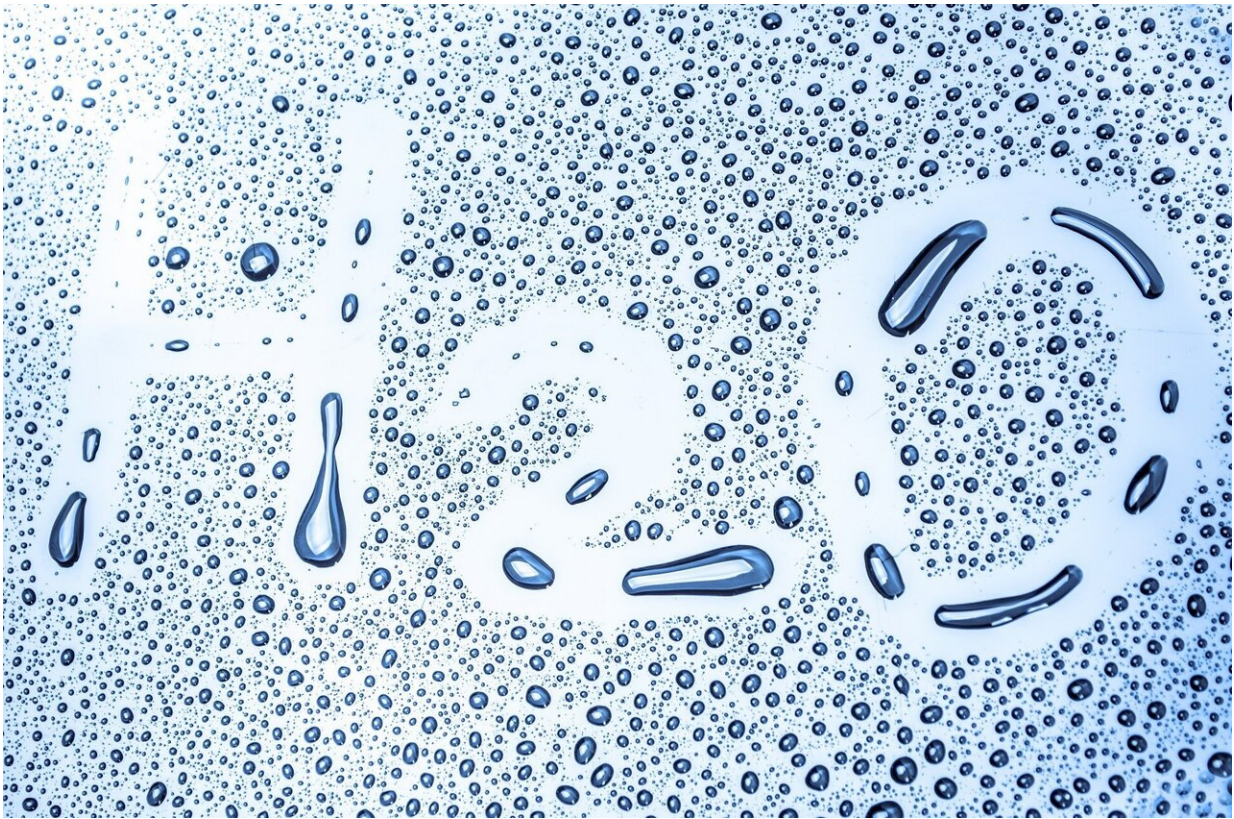


Palestinian farmers benefit from Birmingham water technology project

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University of Birmingham scientists have worked with international students to produce prototype desalination equipment that could help Palestinian farmers avoid water shortages and grow crops efficiently.

The equipment is built from off-the-shelf parts and could be deployed easily and relatively cheaply across the Middle East. The prototype system is currently being trialled in the UK and Israel, with field tests soon to begin in Palestine.

Groundwater resources around the world are becoming increasingly depleted and salinised, with many aquifers straddling political boundaries. Such resources in the Jordan Valley are shared among Israeli, Jordanian and Palestinian residents.

The training and research programme has seen students construct desalination prototypes based on a simple but efficient batch-reverse osmosis (RO) technology that recovers up to 80% of the salinized [water](#)—making it useable for irrigation purposes.

Programme leader Professor Philip Davies from the University Of Birmingham has worked with academics and students in the UK, Israel, Jordan and Palestine—publishing the group's findings in the journal *Desalination and Water Treatment*.

"Our work demonstrates a successful example of researchers and students working across borders to create easily deployable technology that is solar powered and helps to conserve precious groundwater," commented Professor Davies.

"The system can be readily implemented with levels of engineering expertise available in many areas of the world. This research and development programme demonstrates a valuable approach in regions facing transboundary water challenges. The achievements of this project have been possible because of coordinated efforts among UK, Israeli, Jordanian and Palestinian scientists."

Engineering students from the University of Birmingham are now

working on the next phase of the project, which began with participation from students at Aston University. University of Birmingham is continuing to work with regional partners at Arava Institute of Environmental Studies (Israel) and Palestinian Wastewater Engineers Group (West Bank).

The Jordan River Basin is a problematic area in terms of water management for agriculture. International agreements limit access to groundwater for Palestinians living in the West Bank. Poor management has led to over-pumping, with record highs of water salinity leading to changes in cropping patterns.

Cash crops intolerant to salinity have been replaced by 250,000 Medjool date palms which demand large quantities of water and could cause groundwater supplies to run out within five years.

Desalination can be energy intensive, and costly; so the project was designed to produce an off-grid desalination system powered by [solar energy](#).

"Based on the enthusiastic uptake by students, progress made in training and [community engagement](#), and [technological advancements](#) achieved, we want to continue this type of research-led training project to spread desalination technology and foster collaboration across borders," added Professor Davies.

"The approach described here may be applied, not only in Jordan Valley, but also in other regions where transboundary water resources are increasingly depleted and affected by salinization."

More information: 'Off-grid desalination for irrigation in the Jordan Valley' - Hala Abu Ali, Margaret Baronian, Liam Burlace, Philip A. Davies, Suleiman Halasah, Monther Hind, Abul Hossain, Clive Lipchin,

Areen Majali, Maya Mark and Tim Naughton is published by
Desalination and Water Treatment.

Provided by University of Birmingham

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