



## **TechnoSeed: Jordan's Potato Seed Revolution Amid Water Scarcity**

When partners of Mohammed Yasin, manager of TechnoSeed, faced a crisis of shortage in potato seeds provided from Europe to Egypt, the need to start producing royalty-free potato seeds to supply the regional market became urgent. Today, the Jordanian company TechnoSeed follows new technologies and innovation in every step of the agricultural production line and produces ten varieties of potato seeds. It is the first in the region to do so and perhaps one of the most innovative.



Valentine Nesser and Musab Subuh, members of the Blue Peace Middle East Junior Media Hub, visited TechnoSeed's site in Balqa, northeast of Amman, and the Royal Botanic Garden in Jerash in northern Jordan.

According to Yasin, the need for TechnoSeed's model of producing seedlings of different potato varieties arose not only to fill a supply gap but also to build what he described as "a model that created a huge difference in food sovereignty in the country for local and regional businesses." Jordan, once an importer of potato seeds, has now become an exporter of ten different varieties. The company achieves this while

using sustainable methodologies, new technologies, and innovative approaches that save water and energy, allowing it to produce better quality potato seeds at a lower cost and in larger quantities.

Jordan is one of the countries most severely impacted by climate change and is considered the most water-scarce nation in the world. Against this backdrop, TechnoSeed has invested in advanced hydroponic technology. Its “aeroponic” method sprays water in cycles to create roots for the first seedlings directly from plant tissues. These tissues are then developed in laboratories under strict conditions to ensure safety and stability.

Alongside this, the company develops royalty-free varieties, conducts genetic re-sequencing to improve them without altering their core DNA, and applies advanced conservation mechanisms. Recycling, mineral reinforcement, and bio-fertilization are integrated into the process, with the dual goals of conserving water and energy as a priority and then producing greater quantities of affordable food resources.



While many of the technical terms may be complex, Yasin stresses the strategic importance of these technologies. On their 50-square-meter agricultural field, they are not only producing seeds but also advancing scientific research on potato varieties, particularly in relation to resilience to climate pressures and water scarcity.

Yasin explained that TechnoSeed is now capable of fully covering the needs of local farmers for potato seeds, meeting domestic demand, and exporting to many countries in the region, with further plans to expand. What makes this more significant is that all of this progress comes despite water scarcity, drought, and climate challenges, positioning TechnoSeed as a leading agricultural solution.

To safeguard the seedlings, the company uses biopesticides to fight diseases that may occur during production. Different models are applied depending on the growth stage of the seedling and the risk of infection. Yasin emphasized that TechnoSeed is also working with the National Scientific Research Center to further develop bio-pesticides and bio-fertilizers with the long-term goal of achieving fully organic agriculture on a commercial scale.



Technical Manager Ahmad Magdy elaborated on the genetic re-sequencing of TechnoSeed's ten potato seed varieties. Each type is developed with a specific purpose in mind: some for processing into French fries, others for chips, and others for cooking and consumption. He explained that the quality of the seeds can be influenced by the

generational order of reproduction; earlier generations tend to be stronger and healthier, while later ones are more vulnerable to viruses and microbes. By rebreeding earlier generations, the company ensures higher resilience and quality in the seeds it produces.



## Bringing Forth Vegetation

At the Royal Botanic Garden in Jerash, visitors are welcomed at the gate by the majestic Maloul Tree, which was officially recognized in 2002 as Jordan's national tree. Once endangered, its population has now grown to approximately two million trees nationwide, thanks to conservation efforts.

The garden has 9 pocket gardens, or characteristic divisions, that simulate various climate spheres in Jordan's nature and feature national plants.

Among these plants are around 19 plants in 'the red zone,' meaning they are endangered and facing the threat of extinction.

Salvia fruticosa, a species of mountain sage, is known to be extinct from the mountains of Jordan and can no longer be found in its natural habitat, according to Mohammed Taso, a guide in the garden.



Taso explained the challenges that the country has been going through: "We have been facing climate challenges, droughts, a rise in heat, and a decrease in rainfall," he said, adding that "like what happened to this

kind of sage [Silvia Fruticosa], it is unfortunately extinct; you can't find it other than here.”

However, he also mentioned the approach they have been following in creating awareness of protecting nature, following traditional and ancestral knowledge, and a holistic approach that gathers all spheres, aspects, and angles—plants, bees, and humans—on building a better future.

After visiting the spheres of Jordan, all gathered in a small land and organized according to planets' and stars' movements, we reached the golden ratio that connects all the spheres and their represented elements: plants, bees, and humans.



TechnoSeed's technology-based agricultural solutions for potato seed production represent one dimension of Jordan's resilience strategy, while the conservation of the Maloul tree and other endangered plant species reflects another—nature-based conservation—as part of Jordan's broader approach to resilience.

Both efforts demonstrate how the country is responding to the challenges of climate change, drought, and water scarcity, not only by protecting its natural heritage but also by ensuring that future generations have sustainable access to food and biodiversity. This, in turn, highlights the interconnectedness of the Water-Energy-Food-Ecosystems (WEFE) Nexus as an approach to climate resilience.

TechnoSeed, with its advanced technologies in hydroponics, seedling production, and food security—saving up to 70% of water while utilizing solar panels for its energy needs—can be seen as a model within the WEFE Nexus framework and a platform for collaboration between Egypt and Jordan.

Concludes with one hope of collective survival: care for nature with compassion. While facing shared challenges together, collaboration on water resources, water diplomacy, food sovereignty, and green energy may provide access to that hope.