

New Wheat & Barley



1 Wheat and barley are among the most important crops contributing to food security and sufficiency in Jordan and the Middle East.



2 Unleavened bread is enjoyed throughout the region, and has been a favourite for thousands of years.



3 But each year Jordan produces less than 3% of the wheat and barley needed to feed its population of 6.5 million.



4 That's mainly because wheat and barley crops are threatened by disease, saline soil and persistent drought.

for Arab Countries



5 Iraq, Jordan, Lebanon, Oman, Saudi Arabia, Syria and Yemen are using nuclear techniques to develop crop varieties that will produce more grain even under tough conditions.



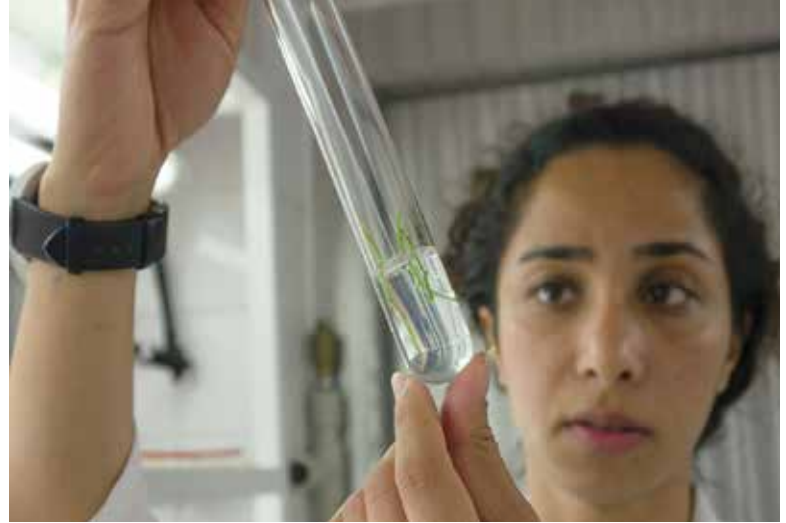
6 The IAEA provides equipment and training to the scientists and irradiates wheat and barley seeds on their behalf at the IAEA laboratories in Seibersdorf, Austria.



7 Natural plant mutation occurs over millions of years and is caused by natural radiation and naturally-occurring DNA replication errors.



8 Irradiating the seeds/plant parts speeds up this process of change.



9 To develop a new variety, plant parts/seeds are exposed to gamma radiation or x-rays for about a minute.

10 This induces changes in the DNA, but doesn't make the plant radioactive.



11 Yahya Shakhateh, Director of the Field Crops Research Directorate at Jordan's National Center for Agricultural Research and Extension (NCARE), says barley varieties more suited to dry conditions are in their final stages of development.

12 Even with the help of nuclear techniques, successfully breeding new wheat varieties will take many years.



13 Abdallah Alomary, a 46-year-old father of five, is excited about the latest barley varieties. Over the years he's planted four wheat and barley varieties from NCARE and has been pleased with the results.

14 This barley crop is the first batch developed using nuclear techniques. He's confident it'll be worth the effort on his 1.3 acre farm.



15 Abdallah is one of 21 Jordanian farmers helping scientists evaluate how the plants fare in real-world farming conditions.



16 42-year-old Khaldoon Karaki comes from a family of farmers and shares 40 hectares with his brother. His plot of land is just down the road from NCARE's testing facilities. Here Khaldoon tests the quality of the available barley varieties.



17 Zaki Muhammad Omari is a 52 year old retired Arabic language teacher. He's also keen to find out how the new barley varieties will benefit his three hectare farm.



18 Both plant breeders and farmers share the responsibility of selecting and evaluating the best plant varieties.



19 Before the IAEA project began seven years ago, more than half of the countries involved had no experience with this kind of nuclear science.



20 Bringing together people from countries with different levels of experience to train each other, exchange knowledge, and share the benefits of new wheat and barley varieties, is considered one of the plant breeding project's biggest achievements.

The Wheat and Barley project is under the Cooperative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA), and funded by the IAEA Department of Technical Cooperation. Text & Photos: Sasha Henriques/IAEA Division of Public Information.