

# Food for the Future

## Making a Difference with Nuclear Technology



**IAEA**  
International Atomic Energy Agency

*In the field of agriculture and food security, the IAEA works with FAO to develop and adapt nuclear techniques to improve crop varieties and soil and water management, enhance livestock production, and control animal and plant pests and diseases.*



The world will need to produce 70% more food between now and 2050 to satisfy the needs of a projected population of 9 billion people.

Diseases and pests cause agricultural losses of 30 – 40% at both pre- and post- harvest levels.

An estimated 925 million people worldwide are undernourished. Most are living in developing countries.

New or improved technologies to increase food production are needed for 500 million small farmers, who feed more than 2 billion people or one third of humanity.

Transboundary animal and plant pests and diseases are not only causing important losses to agriculture productivity and thereby threatening food security (provide more and better quality food) but they are also serious barriers in national and international trade, causing major losses in export incomes.

The sterile insect technique is an environmentally friendly alternative to insecticides that helps suppress insect pests.

Mutation breeding is a nuclear technique used to speed up the natural evolutionary process in crops, triggering varieties that can resist plant diseases, or tolerate environmental stresses such as drought and salinity.

Isotopic and nuclear methods measure and monitor nutrients and water in soil–crop systems in order to ensure that farmers are getting ‘more crop per drop’ by optimizing fertilizer and water use.

Nuclear and nuclear-related techniques are used to develop feeding strategies, adequate management practices and breeding programmes for improving productivity and reproductive efficiency of farm animals.

Food irradiation improves both food safety and food quality. For example, it can control pests in shipments of commodities, increase the shelf life of packaged foods, and provide safe meals for hospital patients and the immune-compromised.

Nuclear technology provides a safe and environmentally friendly way to monitor and trace contaminants or adulteration in foodstuffs.

FAO and the IAEA help improve food security in Member States by developing capacity in mutation breeding, efficient soil and water management practices, the control of transboundary animal and plant pests and diseases and the control of food safety and quality.

*The IAEA develops and transfers nuclear technology to Member States through coordinated research activities, the sharing of good practices and technical cooperation projects that support sustainable socioeconomic development. For more information, please visit [www.iaea.org](http://www.iaea.org), [www.facebook.com/iaeaorg](https://www.facebook.com/iaeaorg) or follow @iaeaorg on Twitter.*