



Feeding the Region in the Future: Food Safety and Security in Asia and the Pacific boosted by Novel Nuclear Applications

What is the current food safety and security situation? The UN Food and Agricultural Organisation (FAO) has estimated that, after harvesting, worldwide about 25% of all food production is lost because of damage caused by insects, bacteria or rodents before it reaches the consumer. In many of the richer nations this level of wastage is 33% or more. This is a massive amount of waste and devising means to minimise such losses are key components to becoming more environmentally responsible. In addition more public education is needed so that a higher value is placed on food as well as recognition of its essential contribution to human existence and the complex role that individual foods play, both positively and negatively, in human health.

At one time food largely came directly to the consumers from the local farmer but in recent years food can now travel large distances before it reaches the consumer. As a result there has been a significant increase in the number of people involved in its safe delivery and the processes that have treated it. Such increases in complexity also are likely to involve produce losses, as well as environmental and economic costs. This global trade in foodstuffs also brings with it a number of concerns, such as: the possible contamination of foods by harmful micro-organisms; the introduction of harmful insects and other pests; and the need to minimise the level of deterioration of the food between the farmer harvesting it and the consumer purchasing it.



Irradiation is an effective alternative to fumigation for insect control

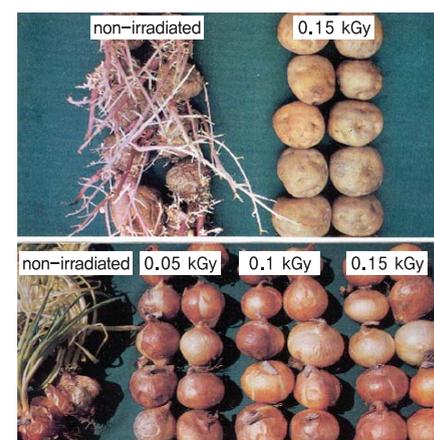
Although there are existing technologies for food preservation and pest control such as chemical fumigation, hot water treatment, modified atmosphere packaging and refrigeration, food irradiation is receiving increased recognition as an attractive and at times safer alternative to these traditional methods. Also it has great promise as a food safety technology that can effectively eliminate disease-causing germs from foods and address increasing worldwide concerns about persistently high food losses from infestation, contamination, and spoilage.

Developing countries in the Asia-Pacific region have been looking very closely at the commercial use of food irradiation, because of its demonstrated benefits to health and to food processing and commerce. In particular they have been well aware of the costs and limitations to their export produce because of the strict quality and quarantine standards set by importing countries.

Since 2007 13 RCA Member States, namely, Australia, Bangladesh, China, India, Indonesia, Malaysia, Mongolia, Myanmar, Pakistan, the Philippines, Sri Lanka, Thailand and Vietnam, have participated for 4 years in a project using food irradiation technologies to enhance regional food safety and security and also to contribute to increasing the economic benefits for their food sectors.

The project design recognised that the regulatory situation for approval, sale, import and export of irradiated foods varied among the participating Member States and so assisted them in the establishment of harmonized national regulations, protocols and procedures.

The project developed guidelines for the phytosanitary (plant health) irradiation treatment of grapes, lychee, longan, mango, mangosteen and rambutan. These guidelines also included technical procedures, export protocols, good agricultural and manufacturing practices, quarantine pest lists for the crops, and requirements for preparation of commodity risk assessments. Ten (10) participating Member States have adopted these as the basis for establishing their protocols.



Sprouting losses in stored potatoes and onions can be prevented by irradiation



Export protocols for nine (9) fruits have been established under the project to solve past export barriers and this has led to a significant increase in international trade in irradiated fruits, especially mango, papaya, lychee, which are economically important fruits in the region. Examples of this are: Australia has exported irradiated papaya and lychee to New Zealand in commercial quantities; and, Vietnam has obtained approval to export Dragon Fruit to the USA.

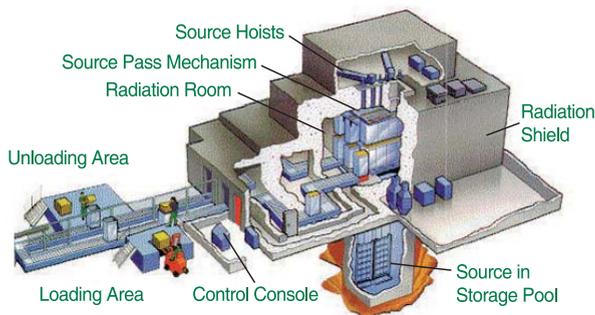
Dragon fruits in Vietnam are irradiated to meet the necessary quarantine requirements for trade

There has been an increase in the number of food irradiation facilities in the region. The guidelines for auditing and accreditation of food irradiation facilities for phytosanitary applications developed as part of this project, together with relevant additional experience and information, have been shared with Member States to assist those involved in drafting national legislations in this area. Member States have conducted thorough public awareness campaigns using a series of materials developed by or provided during the project. The public, as well as the appropriate national quarantine and food control authorities in RCA Member States, have benefitted from the project's promotional and information activities on the use of food irradiation for food safety and security.



Irradiated mangoes in India

The project successfully achieved its objectives of promoting public health, international trade, and economic development benefits of food irradiation and has contributed to the progressive expansion in the use of food irradiation techniques for food safety and security in Member States. However challenges still exist in application of food irradiation techniques. Member States need to continue efforts to establish the harmonized national regulations, protocols and to build up their national capacities in food irradiation to fill the technical gap. The scarcity of both food irradiation facilities and trained personnel remains a challenge for several Member States in the region.



Food irradiation is a process that exposes either packaged food or food in bulk to precisely controlled doses of ionizing radiation for food sanitary or phytosanitary purpose. Sanitary application of food irradiation mainly target bacteria in foods to produce safe food, and phytosanitary (plant health) application target insect pests, such as fruit flies, which can protect farm produce in imported countries. The irradiation process is well protected, involving no human exposure to radiation sources. It is also a cold treatment so it can be carried out to frozen foods. Most importantly, irradiated foods have been evaluated since 1960s and are suitable for human consumption.



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