PPQ Irradiation Program: Current Status

Woodward D. Bailey

Treatment Quality Assurance Unit
Center for Plant Health Science and Technology
USDA-APHIS-PPQ, 1730 Varsity Dr, Suite 400
Raleigh NC, 27606

In 1997, the US Department of Agriculture (USDA) Animal Plant Health Inspection Service (APHIS) Plant Protection and Quarantine (PPQ) approved Irradiation as a Phytosanitary Tool (IPT) for use on papayas shipped from Hawaii to the conterminous U.S., Guam, Puerto Rico, and US Virgin Islands. Later in 2002, IPT was approved for all fresh fruits and vegetables imported into the US. In 2010, this burgeoning program was responsible for the treatment of over 8 million kg of fresh fruit, a 160% increase since 2008.

Irradiation is the exposure of a substance to ionizing energy (radiation) to achieve a desired technical benefit. In the case of IPT, the desired endpoint is mortality, sterility, reduced fitness, or the inability to emerge or fly. There are three types of ionizing radiation: EBeam, Radioactive isotopes, and X-rays. The dose, measured in Grays, is the amount of ionizing radiation delivered. PPQ treatments are in the range of 60-400 Gray.

Most PPQ irradiation treatments occur in the exporting country as part of a preclearance program. Presently, PPQ supervises irradiation treatments in India (mango), Mexico (chile manzano, dragon fruit, guava, mango, and mangosteen), Thailand (dragon fruit, longan, mango, mangosteen, and rambutan), and Vietnam (dragon fruit). Bananas, curry leaves, dragonfruits, longans, lychees, mangosteens, rambutans, starfruits, and sweet potatoes are irradiated for domestic movement within the US. In 2011, PPQ certified the first domestic irradiation facility for treatment of US stone fruit exports to Mexico. Also in 2011, PPQ started domestically irradiating mangoes from Pakistan.

Data for all PPQ-supervised irradiation treatments are stored in the Irradiation Reporting and Accountability Database (IRADS). IRADS is one of several databases in the Commodity Treatment Information System (https://treatments.cphst.org/tqau/) that collect, store, and create reports from PPQ-monitored phytosanitary treatment data. Information for commodity production units, packing houses, and treatment facilities are collected in IRADS, allowing for complete traceability for any irradiated commodity.