Case Study of Preclearance Program

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Background of preclearance program

- In 1986, US-FDA approved irradiation doses up to 1,000 Gy for preservation and disinfection of fresh fruits and vegetables.

- In 2006, USDA-APHIS approved generic irradiation doses for quarantine disinfection of fresh commodities:
  - 150 Gy tephritid fruit flies
  - 400 Gy all insects except Lepidoptera

- In 2007, Thailand: Seven kinds of fruits approved for export to U.S. using irradiation (400 Gy) as generic dose due to the possible presence of non-fruit fly pests (USDA-APHIS, 2007).
These commodities were mango, mangosteen, rambutan, lychee, longan, pineapple, and dragon fruit shipping (APHIS, 2012).
Export volume of mango from Thailand to the United States (2010-2012)

Graph showing the export volume of various fruits from Thailand to the United States from 2007 to 2013. The y-axis represents the volume in Tons, and the x-axis represents the years from 2007 to 2013.

- **2007**: Litchi (24 Tons)
- **2008**: Lychee (38 Tons)
- **2009**: Longan (1 Tons)
- **2010**: Mango (0 Tons)
- **2011**: Mangosteen (0 Tons)
- **2012**: Pineapple (0 Tons)
- **2013**: Dragonfruit (0 Tons)

The graph highlights the export volume of mango (Mango) as the key focus, with other fruits also being exported during these years.
Export volume of irradiated Thai fruits to the U.S. (2016-2018)

- 2016: 400 tons
- 2017: 1,700 tons
- 2018: 100 tons

(Tons)
Mangosteen exports to the U.S.
CASE STUDY IRRADIATION / MANGO
How irradiation could be effectively for mango?

- Internal damage from treatment
  - Fruit maturity?
  - Varieties of mango?
  - Distribution of radiation is not uniformly? (Dmin 400 Gy. – Dmax 1,000 Gy.)
  - Storage temperature?

- Study to lower dose for specific pests without damaging mango fruit quality
- Study on mango quality during storage under simulated commercials conditions
CASE STUDY IRRADIATION: LYCHEE/LONGAN/RAMBUTAN

- Study on lychee, longan, rambutan quality during storage under simulated commercials conditions.
  - By Air
  - By Ship
TRENDS OF FRUIT EXPORTS IN THE FUTURE

WHAT COMMODITY DO YOU WANT TO EXPORT TO U.S.?

➤ Is it prohibited to import to U.S.
➤ Can it be treated with irradiation?
➤ What is the postharvest shelf-life?
➤ Is it fruit as dominant commodity in your country?
➤ Do U.S. People like it?
Global volume 2013 ($\geq 20,000$ tonnes)

International Atomic Energy Agency (IAEA)
Thailand’s next steps: irradiation program for fruits export

- Keeping quality of fruits
- Control quarantine pests
- Meet the requirements of exporting countries

Thank you