



USDA-APHIS-PPQ

Phytosanitary Irradiation

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USDA APHIS PPQ



PPQ Mission

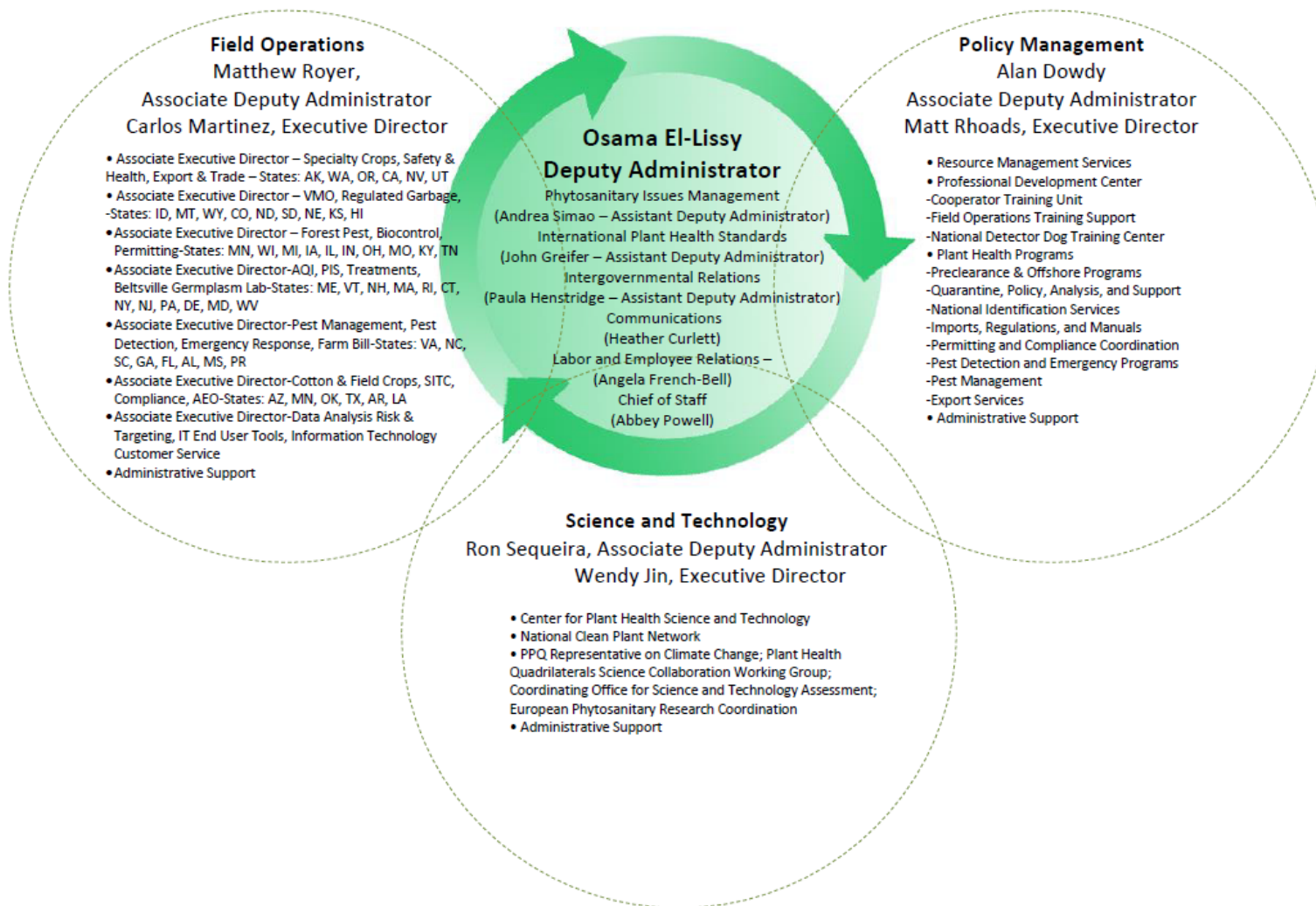
Regulate the movement of any commodity capable of harboring invasive, threatening plant pests, including noxious weeds, in order to protect the “agriculture, environment, and economy of the United States”

Facilitate import, export, and interstate commerce of agricultural products and other commodities that pose a risk of harboring certain plant pests

Plant Protection Act of 2000

Plant Protection and Quarantine Organizational Structure

Current as of July 2020



Phytosanitary Treatments

Strategies to mitigate pest risk may include field measures, inspection, and **phytosanitary treatments**.

Regulatory measure to prevent the introduction or spread of quarantine pests by killing or sterilizing with high efficacy.

Treatment Examples:

- Heat (44-48 °C)
- Cold (0-2 °C)
- Fumigation
- **Irradiation**

Approved Source Types

Gamma: ^{60}Co or ^{137}Cs emits photons during decay

E-beam: High energy electrons propelled from an electron gun

X-ray: High energy electrons are converted to X-rays (photons)



Phytosanitary Irradiation

- APHIS treatments require absorbed doses between 150-400 Gy
- FDA limits fresh fruit and vegetable treatments to 1000 Gy
- Irradiated food products must bear the radura



Phytosanitary Irradiation

Treatment response options:

- Mortality
- Sterilization
- Inactivity or Devitalization
- Inability to Emerge/Fly



Mortality is usually not the target response for APHIS treatments and live insects may remain after treatment

Pest Proof Packaging

As mortality is not the target response for APHIS treatments, live insects may remain after treatment





Irradiation Program Types

Preclearance and Offshore

Irradiation of U.S. Imports in Country of Origin

Upon Arrival (Port of Entry)

Irradiation of U.S. Imports in United States

Domestic Quarantine

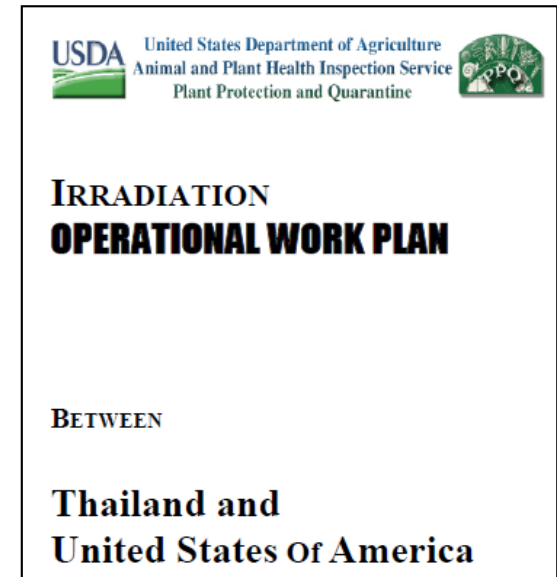
Irradiation for Domestic Movement out of Federal Quarantines

Exports

Irradiation of U.S. Exports

Import Regulatory Summary

- Market Access Granted
- Framework Equivalency Work Plan Signed
- Operational Work Plan Signed
- Commodity-Specific Addendum Signed



Import Regulatory Summary



- Facility Plan Approved
- Facility Certified
- Importer Compliance Agreement Signed
- Importer Permit Granted
- Packaging Approved
- Process Configuration Approved



Framework Equivalency Work Plans

<u>Country</u>	<u>Date FEWP Signed</u>
Thailand	January 1, 2006
India	February 1, 2006
Mexico	May 1, 2006
Philippines	July 1, 2007
Vietnam	July 1, 2007
Laos	July 1, 2007
Malaysia	July 1, 2007
South Africa	October 1, 2008
Pakistan	May 1, 2010
Peru	September 1, 2012



Framework Equivalency Work Plans

<u>Country</u>	<u>Date FEWP Signed</u>
Australia	November 1, 2014
Dominican Republic	June 1, 2015
Grenada	May 1, 2016
Ecuador	January 1, 2017
Colombia	March 1, 2017
St. Vincent and the Grenadines	November 1, 2017
Jamaica	July 1, 2018
Chile	January 1, 2019
Ghana	June 1, 2020
Egypt	June 1, 2020



2019 Import Program Totals

<u>Country</u>	<u>Kgs</u>
Mexico	21136034
Vietnam	8286273
India	1344755
Thailand	482490
South Africa	195663
Peru	195255
Pakistan	106410
Australia	57928
Grenada	19379
Jamaica	9010
Total	31,833,197



2019 Domestic Program Totals**

<u>Commodity</u>	<u>Kgs</u>
sweet potato	5,374,131
longan	104,790
curry leaf	96,030
moringa leaves	21,985
basil	21,874
litchi	16,171
rambutan	14,073
moringa pods	11,876
dragon fruit	6,408
papaya	3,382
betel	452
Total**	5,671,172

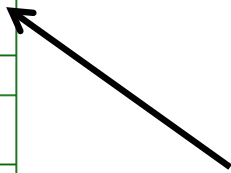
** Totals only account for one of two predeparture facilities

Generic and Pest-specific Doses


Table 5-2-12 Pest-Specific Minimum absorbed dose (Gy)

Scientific Name	Common Name	Minimum Absorbed Dose (Gy)
<i>Cryptophlebia illepidia</i>	Koa seedworm	250
<i>Cylas formicarius elegantulus</i>	Sweet potato weevil	150
<i>Cydia pomonella</i>	Codling moth	200
<i>Euscepes postfasciatus</i>	West Indian sweet potato weevil	150
<i>Grapholita molesta</i>	Oriental fruit moth	200
<i>Omphisa anastomosalis</i>	Sweet potato vine borer	150
<i>Pseudaulacaspis pentagona</i>	White peach scale	150
<i>Rhagoletis pomonella</i>	Apple maggot	60
<i>Sternochetus mangiferae</i>	Mango seed weevil	300
	All other fruit flies of the family Tephritidae which are not listed above	150
	Plant pests of the class Insecta not listed above, except pupae and adults of the order Lepidoptera	400

Pest-Specific
Absorbed
Dose



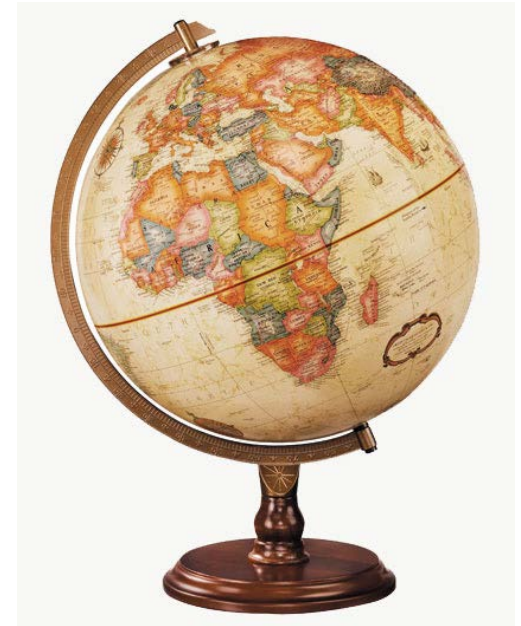
Generic
Absorbed
Dose



Trade Impacts

Generic Absorbed Doses Facilitate Trade

If a risk analysis of a new commodity demonstrates that no pupae or adult Lepidoptera follow a pathway, then export approval can happen without further research





FAVIR

<https://epermits.aphis.usda.gov/manual/index.cfm>

☒ Country/Region: ☐ Approved Name:

-- Select --



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Date: Sep 4, 2013

Fruits and Vegetables Import Requirements (FAVIR)

Welcome to the APHIS Fruits and Vegetables Import Requirements (FAVIR) Database. This online reference allows easy access to regulations and information pertaining to the importation of fruits and vegetables into the United States, its territories, and possessions. Collectively, these regulations are commonly referred to as Quarantine 56, or Q56. Information on obtaining a permit for the importation of fresh and frozen fruits and vegetables can be obtained by going to the following website: [Fruit and Vegetable Import Permit](#).

All Countries List: The All Countries List is a Country Summary Report of commodities approved for import from any country.

A flag () indicates information that is intended for and available to an APHIS/CBP audience only.

Important Alerts:

	Short Description	Issued Date
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No Alerts found

Recent Changes:

Change Type	Description	Change Date
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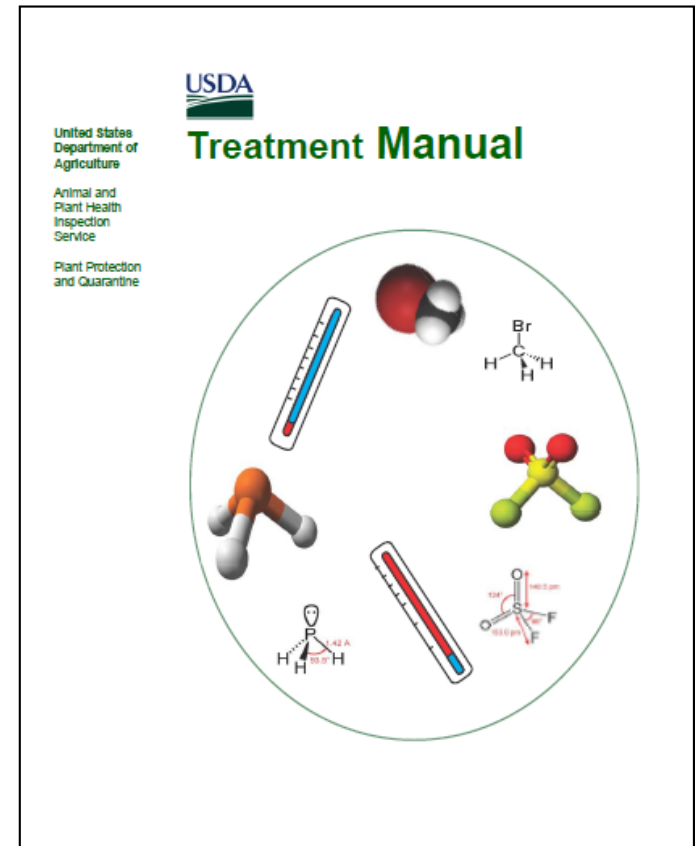
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PPQ Treatment Manual

http://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/treatment.pdf


- Import-driven Manual
- Treatment Schedules
- Irradiation Overview
- Pest Specific/Generic Doses
- Facility Certification
- Facility Audits
- Dosimetry
- Dose Mapping





PPQ Irradiation Treatment Site

USDA APHIS → Plant Health → Import into the US
→ Quarantine Treatments → Irradiation

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Irradiation Treatment

Last Modified: Jun 26, 2015

In order to meet U.S. entry requirements, certain fresh fruits and vegetables require the application of a quarantine treatment to mitigate pests that may pose a phytosanitary risk to US agriculture and natural resources. Irradiation is a viable option utilized for this purpose in some instances.

Click the links below for information to determine if an irradiation treatment is an option, and if applicable, the requirements to utilize irradiation treatments.

[I want to use irradiation as a treatment to import a commodity. Where do I start?](#)

Before a fresh fruit or vegetable becomes eligible for irradiation treatment into the U.S. it must first be approved for importation into the U.S. and listed in the Fruits and Vegetables Import Requirements Database (FAVIR). If a commodity is not listed in FAVIR then it is not currently eligible for entry and must be approved for importation via the Animal and Plant Health Inspection Service (APHIS) commodity import approval process. This process begins with a request from the Plant Protection Organization of the originating country. For more concerning the commodity import approval process, view the [Commodity Import Request Process APHIS web page](#).

[I checked FAVIR. The commodity is eligible for entry, but irradiation is not listed as an approved treatment. What do I do?](#)

[I checked FAVIR. The commodity is eligible for entry, and irradiation is an approved treatment. What are my options?](#)

[Are there non-phytosanitary import requirements that I should be aware of?](#)

[I am interested in having an irradiation facility certified by APHIS to apply quarantine treatments for fresh fruits and vegetables. Where can I get more information?](#)

International Standards

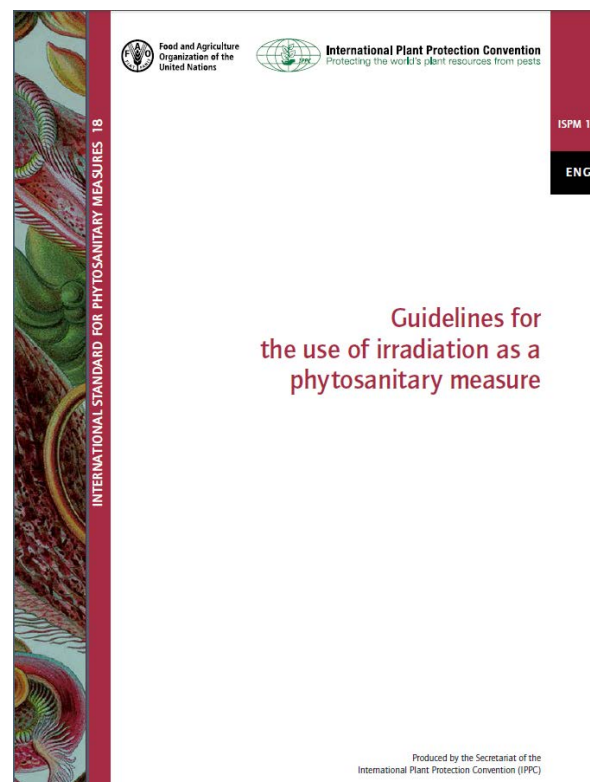
International Plant Protection Convention International Standard for Phytosanitary Measures (ISPM):

ISPM 18 Guidelines for the Use of Irradiation as a
Phytosanitary Measure

ISPM 28 Phytosanitary Treatments for Regulated
Pests

ASTM International:

ASTM F1355 - 06 Standard Guide for Irradiation of
Fresh Agricultural Produce as a Phytosanitary
Treatment





United States Department of Agriculture

PPQ Stakeholder Registry

<https://public.govdelivery.com/accounts/USDAAPHIS/subscriber/new>



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Thank you!

Questions?

