

QUARANTINE UPDATES

USDA-ARS, U.S. Pacific Basin Agricultural Research Center
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Sharwils Getting Rock Fever

What's New: USDA APHIS is working with avocado growers to iron out details of an export protocol which would allow movement Sharwil variety avocados to the U.S mainland for the first time since 1992. The protocol will use a systems approach to allow avocados to move from Hawaii to 29 northern-tier states during winter months (October 15 – March 15). Sharwil avocado is a very poor host for fruit flies, and its poor host status is the basis for adopting a systems approach rather than a postharvest quarantine treatment such as heat, cold or irradiation. Rule making for an approved treatment may take a couple years.

We now have export approvals to the mainland for 21 tropical fruits and several vegetables (see table below).

Commodity quarantine treatments or systems for export of Hawaii's fruits and vegetables

Abiu	I	Jackfruit	I
Atemoya	I	Longan	I, H
Avocado	C	Lychee	I, H
Banana	I, N	Mango	I
Breadfruit	I	Mangosteen	I
<i>Capsicum</i> spp.	I	Moringa	I
Carambola	I, C	Papaya	I, H
Citrus	I, H	Pineapple	I, N, H
<i>Cucurbita</i> spp.	I	Rambutan	I, H
Dragon fruit	I	Sapodilla	I
Durian	N	Sweet potato	I, F, H
Eggplant	I	Tomato	I
Guava	I	Cowpea	I

I = irradiation, C = cold, N = non-host status, H = heat (hot water immersion or vapor heat), F = fumigation. Compiled by Dr. Peter Follett, Research Entomologist, Tropical Crop and Commodities Protection Research Unit, Tel. (808) 959-4303, e-mail: peter.follett@ars.usda.gov

More details are given below on the available treatments for our tropical fruits. Treatments are categorized as submitted, proposed, or accepted. Approved treatments are underlined, and only approved treatments are available for exporting fruit at this time. This is general information only; consult APHIS-PPQ for complete quarantine treatment or protocol regulations.

Abiu

- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.

Atemoya

- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.

Avocado

- Cold treatment -- all cultivars, 14 days at $\leq 1.1^{\circ}\text{C}$ (34°F), 16 days at $\leq 1.67^{\circ}\text{C}$ (35°C), 18 days at $\leq 2.2^{\circ}\text{C}$ (36°C); heat shock pretreatment may improve quality.
- Systems approach for 'Sharwil' under development.

Bananas

- Nonhost status -- green bananas, cv. 'Williams', 'Valery' and 'dwarf Brazilian'. Regulation includes specific conditions.
- Irradiation -- all cultivars, 400 Gy if free of banana moth, 150 Gy if free of green scale and banana moth.

Breadfruit

- Irradiation -- 150 Gy and post-harvest dip or orchard treatment for control of surface pests -- or 400 Gy to control surface insects in addition to fruit flies. Fungicide dip required for *Phytophthora tropicalis*.

Carambola

- Cold treatment -- storage for 10 days at $\leq 0.0^{\circ}\text{C}$ (32°F), 11 days at $\leq 0.6^{\circ}\text{C}$ (33°F), 12 days at $\leq 1.1^{\circ}\text{C}$ (34°F), 14 days at $\leq 1.67^{\circ}\text{C}$ (35°F).
- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.

Citrus

- High temperature forced air -- fruit core temperature heated to $> 47.2^{\circ}\text{C}$ (117°F) in not less than 4 hours.
- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.

Dragon fruit

- Irradiation -- 150 Gy and post-harvest dip or orchard treatment for control of surface pests -- or 400 Gy to control surface insects in addition to fruit flies.

Durian

- Nonhost status -- must be inspected and free of surface pests.

Guava

- Irradiation (400 Gy) -- notice recently published for 60-day comment period. Final announcement and export approval follows review of comments.

Jackfruit

- Irradiation -- 150 Gy and post-harvest dip or orchard treatment for control of surface pests - or 400 Gy to control surface insects in addition to fruit flies. Fungicide dip required for *Phytophthora tropicalis*.

Longan

- Hot water immersion -- 49°C (120°F) or above for 20 minutes.
- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.

Lychee

- Hot water immersion -- 49°C (120°F) or above for 20 minutes.
- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.
- Vapor heat -- internal fruit temperature raised by saturated water vapor ($\geq 90\%$ RH) to 47.2°C (117°F) (or above) in at least 60 min. Hold at 47.2°C for 20 min. Hydrocool with a cool water spray.

Mango

- Irradiation -- To U.S. -- 300 Gy -- treatment carried out only in an approved facility in Hawaii or in non-fruit fly supporting areas of the mainland U.S.
- Vapor heat -- To Japan -- cv. 'Haden' and 'Keitt.' Fruit core temperature heated to $> 47.2^\circ\text{C}$ (117°F) in not less than 4 hours. Other conditions apply. Request submitted to Japan to add all other cultivars.

Melons (cantaloupe, honeydew, watermelon)

- Irradiation -- 150 Gy and post-harvest dip or orchard treatment for control of surface pests - or 400 Gy to control surface insects in addition to fruit flies. Sepals must be removed.

Mangosteen

- Irradiation -- 150 Gy and post-harvest dip or orchard treatment for control of surface pests - or 400 Gy to control surface insects in addition to fruit flies. Sepals must be removed.

Papaya

- High temperature forced air -- fruit core temperature heated to $> 47.2^\circ\text{C}$ (117°F) in not less than 4 hours.
- Vapor heat -- fruit core temperature heated by saturated water vapor to 44.4°C (112°F). Hold fruit temperature at 44.4°C for 8.75 hours, then cool immediately, OR, fruit core temperature heated to $> 47.2^\circ\text{C}$ (117°F) in not less than 4 hours.
- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.

Pineapple

- Nonhost status -- for cultivars with 50% or more 'smooth Cayenne' parentage; includes 'Sugarloaf'.
- Irradiation -- 150 Gy -- for cultivars other than 50% 'smooth Cayenne'.
- Vapor heat -- for cultivars other than 50% 'smooth Cayenne'. Fruit core temperature heated by saturated water vapor to 44.4°C (112°F). Hold fruit temperature at 44.4°C for 8.75 hours, then cool immediately.

Rambutan

- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies
- Vapor heat -- internal fruit temperature raised by saturated water vapor ($\geq 90\%$ RH) to 47.2°C (117°F) (or above) in at least 60 min. Hold at 47.2°C for 20 min. Hydrocooling is optional.

Sapodilla

- Irradiation -- 150 Gy -- or 400 Gy to control surface insects in addition to fruit flies.