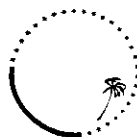


SOUTH PACIFIC COMMISSION

Quarantine Advisory Leaflet 11
1988

PAWPAW

(including Mountain Pawpaw)

Latin name:

Carica papaya

Family:

Caricaceae

Closely related plants:

Carica x heilbornii var. *pentagona* —

Babaco

Carica pubescens — Mountain pawpaw

Trade commodity:

Fresh fruit

Propagating material:

Seed

Loan no. 8416 (B)

Quarantine Risks

The major trade is in fresh fruit to temperate countries outside the SPC region, but there is some, occasional, trade between countries of the region.

Fresh fruit

A number of fruit fly species infest pawpaw in the region and each has a different distribution. Because of this, trade in pawpaw between countries could result in their further spread, unless special precautions are taken. Those fruit flies of concern are:

Dacus cucurbitae (melon fly), *D. dorsalis* (oriental fruit fly), *D. frauenfeldi* (mango fly), *D. melanotus*, *D. passiflorae*, *D. triseriatus*, *D. tryoni* (Queensland fruit fly), *D. xanthodes*.

There are some important insect and mite pests of leaves, stems and fruits, such as:

Aspidiotus destructor (coconut scale), *Brachylybas variegatus* (brown coreid bug), *Elytrurus griseus* (leaf weevil), *Icerya seychellarum* (Seychelles scale), *Polyphagotarsonemus latus* (broad mite), *Tetranychus neocaledonicus* (vegetable mite).

It is unlikely that these pests would be present on fruit of export quality and treatments are recommended only if they are found on inspection.

There are several fungal pathogens that attack pawpaw and many of them attack the fruit, such as:

Colletotrichum acutatum (fruit rot),
Phytophthora nicotianae var. *parasitica*
(fruit rot).

These and the other fungi recorded are not of quarantine importance as they have a wide distribution in the region and are unlikely to be present on fruit of export quality, imported without leaves and stalks attached.

Consignments should not contain trash. Fruits should be unblemished.

Virus diseases do occur on pawpaw and both papaya ringspot and papaya mosaic have been recorded in the region. Neither of these viruses is considered to be of quarantine importance with the trade in fruit.

Propagating material

Cuttings

Pawpaw is not vegetatively propagated, but babaco and mountain pawpaw are usually grown from cuttings. Pests and diseases could be carried on or in such material.

Tissue cultures

Tissue cultures of pawpaw and babaco are available and importers should be encouraged to introduce plants in this way. Plants in tissue culture are not necessarily free of virus.

Seed

Good quality commercial seed is not considered a quarantine risk. None of the viruses of pawpaw are likely to be seed-borne.

Quarantine Action and Treatments

Mandatory commodity treatments should be carried out in the exporting country. These should be stated on a phytosanitary certificate, which should accompany the consignment and clearly state its origin.

Fresh fruit

A sample of the fruit should be inspected on arrival to ensure that no blemished fruits are present. If there are, *either*, examine the entire consignment, destroy the blemished fruit and release the remainder, *or*, if impractical, destroy or re consign the shipment. Any leaves, stems or other trash should be removed and burnt.

Fruit flies

If possible, a phytosanitary certificate should be obtained stating that the coun-

try or area from which the consignment originated is free of those fruit flies of concern. Otherwise, consignments should be fumigated with ethylene dibromide at normal atmospheric pressure using 18g/m³ for 2 hours at 21°C or above.

With the withdrawal of ethylene dibromide, countries may decide not to import pawpaw from areas where there is a risk of introducing new fruit flies, or require the use of alternative treatments, such as:

Double hot water dip (for *D. dorsalis* and *D. cucurbitae*). Within 18 hours of picking (during which time the fruit should be kept at 18.3°C or above) submerge fruit at least 10 cm under water at 42°C for 30 min. Within 3 min of removal transfer to water at 49°C for 20 min.

Vapour heat (for *D. dorsalis* and *D. cucurbitae*). Treat fruit with saturated water vapour at 44.4°C and hold for 8 hours 45 min when the centre of the fruit reaches that temperature, then cool immediately to normal temperatures.

Pests other than fruit flies

Fumigate with methyl bromide at normal atmospheric pressure as follows:

g/m ³	time (hours)	temperature (°C)
48	2	11-15
40	2	16-20
32	2	21-25
24	2	26-30
16	2	31 and above

Propagating material

Seed

Commercially packaged seed from reputable sources is of minimal quarantine risk, although occasional checks should be made to ensure the maintenance of acceptable standards. Preferably seed should be dusted with a fungicide, and thiram is recommended. If insects are found, fumigate with methyl bromide

using 48g/m³ for 2.5 hours at 21°C and above.

Cuttings

Cuttings should either be fumigated with methyl bromide at the rates and times given in the table above or dipped in a mixture of 0.1 per cent carbaryl, 0.1 per cent malathion (or diazinon) and 1.0 per cent white oil for 30 sec and dry-dusted in captan or thiram, and then grown in quarantine in the importing country.

Tissue cultures

As a condition of entry, plants in tissue culture should be grown in an opaque, antibiotic-free, agar medium in clear glass or plastic containers. Culture flasks should be inspected to make sure that they are free from microbial contamination. If contaminated, the cultures should be destroyed or returned to the country of origin or the plants removed from the flasks and grown in post-entry quarantine for further checking.

A phytosanitary certificate should accompany the consignments to verify the identity of the plants and that they are free of viruses.

This leaflet was prepared and published by the SPC Plant Protection Service, Private Mail Bag, Suva, Fiji.

This leaflet gives general guidance only; quarantine action is subject to the legislation and regulations of individual countries of the SPC region.

Leaflets in this series include:

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|---------------|---------------|
| (1) Banana | (7) Peanuts |
| (2) Beans | (8) Tomato |
| (3) Cabbage | (9) Taro |
| (4) Citrus | (10) Capsicum |
| (5) Cucurbits | (11) Pawpaw |
| (6) Orchids | |

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Original text: English.

South Pacific Commission Cataloguing-in-Publication Data

Pawpaw.

(Quarantine advisory leaflet / South Pacific Commission ; 11)

1. *Carica papaya* 2. *Carica pubescens* 3. Papaya—Diseases and pests 4. Plant quarantine—Oceania I. South Pacific Commission. Plant Protection Service II. Series

634.651'993

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ISBN 982-203-077-0