



QUARANTINE REQUIREMENTS FOR IMPORT OF FIJIAN PAPAYA TO AUSTRALIA



October 2002



Table of Contents

Introduction.....	4
Import conditions for Fiji papaya.....	4
Papaya export pathway.....	4
Infield practices.....	4
Grower and site registration.....	4
Field hygiene.....	5
Crop husbandry practices.....	5
Fruit fly monitoring and control	5
Harvest.....	5
Exporter / Packhouse – Quarantine procedures	5
Licensing.....	5
Packhouse/Fiji MASLR quarantine inspection.....	5
HTFA quarantine treatment chamber	6
Audit.....	6
Loading of fruit into HTFA chamber.....	7
Post treatment grading and packing.....	7
Phytosanitary certificate.....	7
Fiji MASLR audit	7
On farm production.....	7
Exporter packhouse.....	8
Fiji MASLR inspection.....	8
Inspection on arrival in Australia	8
Quarantine directive	8
Actions undertaken on the interception/detection of organisms or contaminants	9
Quarantine pests	9
Non quarantine pests	9
Contaminants	9
Soil	9
Extraneous plant material.....	9
Import clearance.....	9
Non-compliance feedback.....	9
Contingencies following import clearance	9
Attachment 1. Pests of quarantine concern to Australia associated with fresh papaya fruit from Fiji.....	10

Introduction

This document describes the import conditions for Fijian papaya as determined by Biosecurity Australia (BA) and the Australian Quarantine Inspection Service (AQIS). The import conditions have been developed in cooperation with the New Zealand Ministry of Agriculture and Forestry (NZ MAF) and Fiji Ministry of Agriculture, Sugar and Land Resettlement (MASLR). AQIS and BA gratefully acknowledge the input from respective ministries.

Papaya from Fiji was exported to Australia using an ethylene dibromide fumigation treatment regime for fruit flies up until 1995. In the absence of an alternative and equivalent fruit fly treatment, the withdrawal of ethylene dibromide in 1995 stopped papaya imports from Fiji. This prompted Fiji to request in November 1996 that Australia accepts a High Temperature Forced Air (HTFA) disinfestation treatment of papaya for fruit flies.

BA and AQIS have considered Fijian HTFA efficacy data, current Fijian papaya pest and disease lists, the non preferred fruit fly host status of mature green and colour break papaya, interception data of Fijian papaya exported to NZ for the past three years and the acceptance of HTFA as an interstate quarantine disinfestation treatment for papaya fruit within Australia, in determining revised import conditions for Fijian papaya.

Imports of Fijian papaya will recommence under revised import conditions which include general requirements for importation of all fruit and vegetables as specified within the AQIS Import Conditions Database (ICON), in field monitoring and control of fruit flies of economic importance (*Bactrocera xanthodes* and *B. passiflorae*), crop hygiene and husbandry standards as specified, export of mature green or colour break fruit and the use of HTFA treatment. BA considers these phytosanitary measures, when combined, will meet Australia's acceptable level of protection (ALOP) for importation of fresh papaya fruit from Fiji.

Import conditions for Fiji papaya

The commodity to be imported is fresh papaya (*Carica papaya*) fruit, varieties Sunrise Solo and Waimanalo Solo, for human consumption. These import conditions apply only to Fijian fruit sourced from growers registered with Fiji MASLR and only from the main Fijian island of Viti Levu.

Papaya export pathway

Infield practices

Grower and site registration

Growers who intend to produce papaya for export to Australia will sign a declaration to this effect. All growers and sites of production are to be registered with Fiji MASLR. The registration form to include:

- A map of the farm
- Number and age of papaya trees on the farm
- Current seasonal husbandry measures including pest and disease control information and names of fruit fly host plants in or immediately adjacent to the production area

All of the approved growers are to be given individual numbers for Australian export identification. Records of approvals (grower declaration forms) are to be held by the grower, exporter, Fiji MASLR extension and Fiji MASLR quarantine.

Field hygiene

Growers are to ensure that fruits of papaya and other fruit fly host crops that are ripe, over ripe, that have fallen on the ground or have been discarded during harvesting are removed from the registered site and surrounding area and disposed off either by burying or burning.

Crop husbandry practices

Growers will follow papaya husbandry practices recommended by Fiji MASLR extension and Fiji MASLR extension officers will regularly visit the papaya farms to check for compliance. Fiji MASLR extension officers will advise Fiji MASLR Quarantine services of any non-compliance.

Fruit fly monitoring and control

- Fiji has an exotic fruit fly monitoring system consisting of a network of methyl eugenol and cue lure traps, which are cleared fortnightly by Fiji MASLR extension officers, quarantine officers and/or plant protection staff. Papaya production areas for fruit to be exported to Australia are to be monitored by the exotic fruit fly monitoring network.
- Fiji MASLR to notify Plant Biosecurity within 48 hours of the detection of an exotic fruit fly species.
- Fruit fly trapping protocol and procedures to follow the Secretariat of the Pacific Community fruit fly manual.

Harvest

Growers will only harvest papayas for export to Australia from the registered sites where field agronomic/husbandry procedures and fruit fly monitoring have been implemented. Only sound green or colour break papayas will be harvested and taken to the exporters pack house for grading in well secured grower numbered bins.

Exporter / Packhouse – Quarantine procedures

Licensing

Each exporter/packhouse packing papaya for export to Australia will be approved and licensed by Fiji MASLR Quarantine and issued with a license number. Records of packhouse approvals and the license number of the packhouse to be held and maintained by the exporter, officer in charge of district quarantine offices and Fiji MASLR quarantine head office.

Packhouse/Fiji MASLR quarantine inspection

Each registered packhouse is to maintain daily records of which growers have supplied produce for packing.

Packhouse staff will inspect all papaya (100%) supplied by growers for export to Australia on a grower basis for the presence of fruit fly eggs, larvae and pupae (and the symptoms of infestation including bruising, soft spots, and skin punctures) infestation by other quarantine pests (attachment 1), decayed and suspect fruits will be rejected for export to Australia.

Quarantine Requirements for Import of Fijian Papaya to Australia

All records are to be maintained by the exporter and will be available for inspection by Fiji MASLR Quarantine. The record sheet to contain:

- Grower site number identification
- Amount/exact quantity of papaya received on a grower basis
- Date of receiving the papaya
- Date of grading
- Quantity of fruit rejected and reasons for rejection
- Quantity of papaya transferred to the Fiji MASLR Quarantine staff for inspection.

Fiji MASLR quarantine inspectors are to undertake a 100% inspection (inspection rate to be reviewed in 12 months) of all papaya supplied on a grower basis after the packhouse staff has completed their inspection and grading. Any papaya with bruises, soft spots, skin punctures, stings, infections and or infestation by quarantine pests (attachment 1) will be rejected for export to Australia.

Fiji MASLR quarantine officer will maintain records of all inspections including:

- Inspection date
- Name of grower
- Name of exporter
- Quantity of papaya inspected
- Inspection result and action taken
- Quantity of papaya transferred to HTFA chamber for treatment

The Fiji MASLR quarantine inspector will complete and sign a transfer form for the papaya, which has been cleared for treatment.

The exporter will ensure that the papaya is transferred promptly to the HTFA chamber in well secured grower numbered bins with a completed transfer form.

HTFA quarantine treatment chamber

Full details of the operation of the HTFA plant and packhouse facilities are outlined in the Fiji MASLR/NZ MAF publication “Quarantine procedures for operation of commercial heat treatment chamber Nadi airport”¹.

Currently, only Nature’s Way Co-operative (Nadi) has been registered by Fiji MASLR as an approved packhouse for treatment and export of papaya fruit.

Only papaya that has been properly graded by the exporter’s staff, inspected by Fiji MASLR quarantine staff and covered by a transfer form will be received at the HTFA chamber for treatment.

Audit

The HTFA treatment and packhouse facility to be audited by an approved organisation/person in the presence of AQIS or BA representatives every 12 months. Audit results to indicate treated fruit has been held at 47.2⁰ C for twenty minutes and fruit monitoring probes to be calibrated and found to be

¹ Copies of this publication are available from the Plant Biosecurity Secretariat upon request.

operating effectively. There may be provision for NZ MAF and BA to share auditing data and requirements, subject to agreement between NZ MAF and BA.

Loading of fruit into HTFA chamber

Fruit to receive HTFA treatment to be weighed and the largest fruit in each bin to have temperature monitoring probe inserted. Probed fruit to be placed within coolest areas of each treatment bin. Coolest areas of each treatment bin to be previously determined by thermal mapping procedures as outlined in Fiji MASLR HTFA manual. Fruit within treatment bins to reach and be held at 47.2⁰ C for twenty minutes.

Post treatment grading and packing

HTFA treated fruit, after hydrocooling, to be removed from the HTFA chamber into the quarantine secure packing area. The packing area to undergo weekly pest disinfestation, or as required, using an appropriate pesticide.

The packing and storage areas for post HTFA treated papaya to be enclosed to prevent entry of pests, windows within the post HTFA storage area to be enclosed with double mesh to exclude pests. HTFA treated papaya fruit to be packed in clean fruit boxes immediately after hydro-cooling and boxes to be secured within air freight containers as soon as practicable. Airfreight containers are to be in good condition with no holes or puncture marks to ensure pests are not able to enter containers.

Phytosanitary certificate

A Phytosanitary certificate will be issued by Fiji MASLR covering each shipment of papaya for export to Australia if Fiji MASLR is satisfied that the pre export activities have been undertaken and will provide the following additional declaration on the Phytosanitary Certificate,

“The papaya in this consignment has been inspected and found free from any visually detectable quarantine pests as specified by Biosecurity Australia and has undergone HTFA treatment as specified by Biosecurity Australia”.

Fiji MASLR audit

Fiji MASLR will formally audit the papaya export pathways of all exporters every two months or as required to ensure compliance with all requirements. Fiji MASLR will maintain records of audits including:

- Audit date
- Components checked
- Any non-conformances and corrective actions taken
- Date of next audit

On farm production

Growers producing papaya for export to Australia will comply with all field control and on farm measures recommended by Fiji MASLR.

Growers who fail to comply with Fiji MASLR husbandry recommendations, on two occasions over a twelve month period, may have their papaya export approval for Australia removed by Fiji MASLR until the compliance issues have been resolved.

Exporter packhouse

Packhouses will not accept papaya for export to Australia from any growers who have not been registered.

If a packhouse detects fruit fly infested papaya during packing they will immediately advise Fiji MASLR of the growers who have supplied papaya for packing on that particular day. Fiji MASLR will visit each of the growers to ensure adequate phytosanitary measures are being maintained and implement corrective action as necessary.

Any packhouse that is found during a Fiji MASLR audit not complying with any of the appropriate requirements will be suspended from packing papaya for export to Australia, until such a time that the Fiji MASLR is satisfied the requirements of the procedure can be met.

Fiji MASLR inspection

If fruit fly (any stage of development) are detected during Fiji MASLR inspection the grower who supplied the infested line(s) will be suspended from exporting papaya to Australia by Fiji MASLR until such time as Fiji MASLR is satisfied that the requirements of the export procedure can be met.

If further detections of fruit fly (any stage of development) are made from papaya supplied by the same grower, in the same calendar year, the growers' right to export papaya to Australia will be suspended for the remainder of that calendar year.

Exporters of papaya found to repeatedly breach the established export procedures will have their export licences suspended by Fiji MASLR.

Inspection on arrival in Australia

AQIS officers will inspect the accompanying documentation on arrival to confirm that it reconciles with the actual consignment.

AQIS requires, with 95% confidence, that not more than 0.5% of the units (for papaya a unit is one fruit) in a consignment are infested with visually detectable quarantine pests. To achieve this, AQIS will sample and inspect 600 units from the consignment, with a zero level of infested units.

A consignment is a quantity of plants, plant products and/or other articles moved from one country to another and covered, when required, by a single phytosanitary certificate (A consignment may be composed of one or more commodities or lots).

A lot is a number of units of a single commodity identifiable by its homogeneity of composition, origin, et cetera, forming part of a consignment.

Quarantine directive

The commodity may be directed to an AQIS approved quarantine facility, for further sampling and specialist examination, if required.

Actions undertaken on the interception/detection of pests or contaminants

Quarantine pests

Quarantine pests for fresh papaya fruit from Fiji are set out in Attachment 1. If quarantine pests or contaminants are detected on the commodity, the importer will be given the option of:

- Treatment of the consignment at the importers cost
- Reshipment of the consignment
- Destruction of the consignment

Imports of papaya from Fiji shall cease immediately until the cause of the non-compliance is investigated, identified and rectified. Actions taken by Fiji MASLR to rectify the non-compliance may be audited by AQIS and/or BA officers. Trade shall recommence when evidence of actions taken to rectify non-compliance have been presented to AQIS and/or BA.

Non-quarantine pests

No action is to be undertaken if non-quarantine pests are detected.

Contaminants

Soil

Not more than 25grams of soil per 600-unit fruit sample to be permitted. Should soil contamination be above this limit, the importer is to be given the options of treatment, re-shipment or destruction of the consignment.

Extraneous plant material

Interception of extraneous plant material (leaves, seeds, twigs) within the 600-unit fruit sample will result in the consignment being held until an assessment of the risk of importing the extraneous plant material has been made by BA.

Import clearance

If quarantine pests and or contaminants are not detected or are successfully treated, import clearance will be given.

Non-compliance feedback

Fiji MASLR will be informed by AQIS or BA of the interception and treatment of any quarantine pests, or non-compliance with other phytosanitary requirements, as soon as possible. Notification to include identification of pests and/or diseases and status of these pests and/or diseases in Australia.

Contingencies following import clearance

Should a quarantine pest be detected after import clearance, incursion management procedures shall be implemented by Commonwealth and State agencies under the direction of the Office of the Chief Plant Protection Officer – AFFA.

Attachment 1. Quarantine Pests for Fresh Papaya Fruit from Fiji

Pest (scientific name)	Common name	Occurrence in Fiji	Reference	Occurrence in Australia	Reference
ARTHROPODS					
Acari (mites)					
<i>Phytoseiulus macropilis</i> (Banks) [Acari: Phytoseiidae]	Phytoseiid mite	Yes	Gutierrez & Schicha (1984)	No	Halliday (1998)
<i>Tetranychus neocaledonicus</i> (Andre, 1933) [Acari: Tetranychidae]	Vegetable spider mite	Yes	Crop Knowledge Master (2002)	Yes (not in WA*)	Halliday (1998)
Coleoptera (beetles and weevils)					
<i>Acicnemis crassiusculus</i> Fairmaire, 1878 [Coleoptera: Curculionidae]	Weevil	Yes	Hinckley (1963)	No	Zimmerman (1993)
<i>Adoretus versutus</i> Harold (synonyms: <i>Adoretus vestitus</i> Boheman; <i>Adoretus vitiensis</i> Nonfried; <i>Adoretus insularis</i> Fairmaire; <i>Adoretus bangalorensis</i> Brenske) [Coleoptera: Scarabaeidae]	Rose beetle, Indian rose beetle, Japanese rose beetle, Fijian cane root grub	Yes	Waterhouse (1997)	No	Waterhouse and Norris (1987)
<i>Carpophilus maculatus</i> Murray [Coleoptera: Nitidulidae]	<i>Dried fruit beetle</i>	Yes	Dingley <i>et al.</i> (1981)	Yes (Tasmania only)	Terauds <i>et al.</i> (1986)
<i>Elytrurus griseus</i> (Guérin-Méneville) [Coleoptera: Curculionidae]	Weevil	Yes	Hinckley (1963)	No	Zimmerman (1993)
Diptera (flies)					
<i>Bactrocera passiflorae</i> (Froggatt) (synonyms: <i>Dacus passiflorae</i> Frogg.; <i>Chaetodacus passiflorae</i> (Froggatt); <i>Strumeta passiflorae</i> (Froggatt)) [Diptera: Tephritidae]	Fijian fruit fly	Yes	Drew (1982); White & Elson-Harris (1992)	No	White & Elson-Harris (1992)

Quarantine Requirements for Import of Fijian Papaya to Australia

Pest (scientific name)	Common name	Occurrence in Fiji	Reference	Occurrence in Australia	Reference
<i>Bactrocera xanthodes</i> (Broun) (synonyms: <i>Bactrocera</i> (<i>Notodacus</i>) <i>xanthodes</i> (Broun); <i>Dacus xanthodes</i> (Broun); <i>Chaetodacus xanthodes</i> (Broun); <i>Notodacus xanthodes</i> (Broun); <i>Tephritis xanthodes</i> (Broun)) [Diptera: Tephritidae]	Fruit fly	Yes	White & Elson-Harris (1992)	No	White & Elson-Harris (1992)
Hemiptera (aphids, leafhoppers, mealybugs, psyllids, scales, true bugs and whiteflies)					
<i>Aleurodicus dispersus</i> (Russell) [Hemiptera: Aleyrodidae]	Spiraling whitefly	Yes	EPPO (2001)	Yes (not in WA*)	Lambkin (2001)
<i>Amblypelta cocophaga</i> China [Hemiptera: Coreidae]	Coconut bug	Yes	CABI (2001)	No	CABI (2001)
<i>Aspidiotus destructor</i> (Signoret) [Hemiptera: Diaspididae]	Transparent scale	Yes	CIE (1966)	Yes (not in WA*)	Smith (1998)
<i>Asterolecanium pustulans</i> (Cockerell) [Hemiptera: Asterolecaniidae]	Oleander pit scale	Yes	Williams & Watson (1990)	No	Schotman (1989)
<i>Brachylybas variegatus</i> Le Guillou [Hemiptera: Coreidae]	Brown coreid bug	Yes	Dingley <i>et al.</i> (1981); Hinckley (1963)	No	FAO (2000)
<i>Chrysomphalus dictyospermi</i> (Morgan) [Hemiptera: Diaspididae]	Spanish red scale	Yes	Greenwood (1929)	Yes (not in WA*)	Smith (1973)
<i>Dysmicoccus nesophilus</i> Williams and Watson [Hemiptera: Pseudococcidae]	Mealybug	Yes	Williams & Watson (1988)	No	Williams (1985)
<i>Ferrisia virgata</i> (Cockerell, 1893) [Hemiptera: Pseudococcidae]	Striped mealybug	Yes	Ben-Dov (1994)	Yes (not in WA*)	Williams (1985)
<i>Howardia biclavis</i> [Hemiptera: Diaspididae]	Burrowing scale	Yes	Williams & Watson (1988)	No	CABI (2001)

Quarantine Requirements for Import of Fijian Papaya to Australia

Pest (scientific name)	Common name	Occurrence in Fiji	Reference	Occurrence in Australia	Reference
<i>Icerya seychellarum</i> (Westwood, 1835) [Hemiptera: Margarodidae]	Seychelles scale	Yes	EPPO (2001)	Yes (not in WA*)	Smith <i>et al.</i> (1997)
<i>Pseudaulacaspis pentagona</i> (Targioni-Tozzetti) [Hemiptera: Diaspididae]	Peach white scale	Yes	CABI (1998)	Yes (not in WA*)	CABI (1998)
FUNGI					
<i>Mycosphaerella caricae</i> Syd. & P. Syd. (anamorph: <i>Phoma caricae-papayae</i> (Tarr) Punithalingam)	Leaf spot; fruit rot	Yes	Dingley <i>et al.</i> (1981)	Yes (not in WA*)	APDD (2002)

* Comment from Agriculture Western Australia (Letter from Shashi Sharma 4 October 2002) and will only apply for imports into WA

References

APDD (2002). Australian Plant Disease Database.

Ben-Dov, Y. (Editor) (1994) A systematic catalogue of the mealybugs of the world (Insecta: Homoptera, Coccoidea, Pseudococcidae and Putoidae) with data on geographical distribution, host plants, biology and economic importance. Intercept Limited, Andover, UK. 686 pp.

CABI (1998). Crop Protection Compendium. CAB International, Wallingford, U.K.

CABI (2001). Crop Protection Compendium. CAB International, Wallingford, U.K.

CIE (1966). Distribution maps of Pests. *Aspidiotus destructor* Sign. Map No. 218. CAB International, Wallingford, U.K.

Crop Knowledge Master (2002). http://www.extento.hawaii.edu/kbase/crop/Type/t_neoca.htm

Dingley, J.M., Fullerton, R.A. and McKenzie, E.H.C. (1981). Survey of agricultural pests and diseases. Records of fungi, bacteria, algae and angiosperms pathogenic on plants in Cook Islands, Fiji, Kuribati, Niue, Tonga, Tuvalu and Western Samoa. Technical Report Volume 2. South Pacific Bureau for Economic Co-operation, United Nations Development Programme, Food and Agricultural Organization of the United Nations. 485 pp.

Drew, R.A.I. (1982). I. Taxonomy. In: Drew, R.A.I., Hooper, G.H.S., and Bateman, M.A. eds. Economic Fruit Flies of the South Pacific Region. 2nd edn. Queensland Department of Primary Industries, Brisbane, Australia. 1-97.

EPPO (2001). EPPO PQR database. EPPO, Paris, France.

FAO (2000). FAOSTAT Agricultural Data. <http://apps.fao.org>

- Greenwood, W. (1929). The food plants or hosts of some Fijian insects. V. Proceedings of the Linnean Society of New South Wales 54: 344-352.
- Gutierrez, J and Schicha, E. (1984). Phytoseiidae and Tetranychoida in Fiji and other South Pacific Islands (Acari). *International Journal of Entomology* 26(4): 386-388.
- Halliday, R.B. (1998). Mites of Australia - A checklist and bibliography. Monograph on Invertebrate Taxonomy 5. 317 pp.
- Hinckley, A.D. (1963). Trophic records of some insects, mites and ticks in Fiji. Bulletin No.45, Fiji: Department of Agriculture.
- Lambkin, T. (2001). Spiraling Whitefly in Australia. DPI Note, Department of Primary Industries, Queensland. File No. APH0085.
- Schotman, C.Y.L. (1989). Plant pests of quarantine importance to the Caribbean. RLAC-PROVEG 21. Caribbean Plant Protection Commission, Port-of Spain, Trinidad and Tobago.
- Smith, D. (1973). Insect pests of avocados. Queensland Agricultural Journal 99(12): 645-653.
- Smith, D., Beattie, G.A.C. and Broadley, R.H. (1997). Citrus Pests and their Natural Enemies: Integrated Pest Management in Australia. Department of Primary Industries, Queensland and Horticultural Research and Development Corporation. Brisbane, Australia. 263 pp.
- Smith, S. (1998). Pest list of papaya from the NT. Department of Primary Industry and Fisheries, Darwin, Northern Territory. (Letter).
- Terauds, A., Williams, M.A., Ireson, J.E., Brieze-Stegeman, R., McQuillan, P.B. and Leighton, S. (1986). Insect pest occurrences in Tasmania 1984/85. Tasmanian Department of Agriculture Insect Pest Survey No. 18 1984-1985[1986]: 1-26.
- Waterhouse, D.F. (1997). The Major Invertebrate Pests and Weeds of Agriculture and Plantation Forestry in the Southern and Western Pacific. ACIAR Monograph No. 44. ACIAR. Canberra, Australia. 99pp.
- Waterhouse, D.F. and Norris, K.R. (1987). Biological control: Pacific prospects. Inkata Press, Melbourne, Australia.
- White, I.M. and Elson-Harris, M.M. (1992) (reprinted with addendum 1994). Fruit Flies of Economic Significance; their Identification and Bionomics. CAB International, Wallingford, UK.
- Williams, D.J. (1985). Australian Mealybugs. British Museum (Natural History), London. 431 pp.
- Williams, D.J. and Watson, G.W. (1988). The Scale Insects of the Tropical South Pacific Region: Part 2 The Mealybugs (Pseudococcidae). CAB International Institute of Entomology, Wallingford, UK. 262 pp.
- Williams, D.J. and Watson, G.W. (1990). The scale insects of the tropical South Pacific region: Part 3 The soft scales (Coccidae) and other families. CAB International Institute of Entomology, Wallingford, UK. 267 pp.
- Zimmerman, E.C. (1993). Australian weevils (Coleoptera:Curculionoidea). CSIRO Publishing.

