Ministry for Primary Industries
Manatū Ahu Matua

Risk Management Proposal:

Fresh Rambutan for Consumption

MPI.IHS.FP.RAMBUTAN

September 2016

New Zealand Government

Growing and Protecting New Zealand

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Submissions

The Ministry for Primary Industries (MPI) invites comment from interested parties on the proposed new import health standard (IHS) for Fresh Rambutan for Consumption (MPI.IHS.FP.RAMBUTAN) which is supported by this Risk Management Proposal (RMP).

The meaning of an IHS is defined in section 22(1) of the Biosecurity Act 1993 as "An import health standard specifies requirements to be met for the effective management of risks associated with importing risk goods, including risks arising because importing the goods involves or might involve an incidentally imported new organism".

MPI therefore seeks comment on the requirements (including measures) in the proposed IHS. MPI has developed this proposal based on the available scientific evidence and assessment of this evidence. If you disagree with the measures proposed to manage the risks, please provide either data or published references to support your comments. This will enable MPI to consider additional evidence which may change how risks are proposed to be managed.

The following points may be of assistance in preparing comments:

- Wherever possible, comments should be specific to an IHS requirement (referencing section numbers or pest names as applicable).
- Where possible, reasons, data and supporting published references to support comments are requested.
- The use of examples to illustrate particular points is encouraged.

MPI encourages respondents to forward comments electronically. Please include the following in your submission:

- The title of the consultation document in the subject line of your email;
- Your name and title (if applicable);
- Your organisation's name (if applicable); and
- Your address.

Send submissions to: plantimports@mpi.govt.nz.

However, should you wish to forward submissions in writing, please send them to the following address to arrive by close of business on 11 November 2016.

Plant Imports
Plants, Food & Environment Directorate
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PO Box 2526
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Submissions received by the closure date will be considered during the development of the final IHS. Submissions received after the closure date may be held on file for consideration when the issued IHS is next revised/ reviewed.

Official Information Act 1982

Please note that your submission is public information and it is MPI policy to publish submissions and the review of submissions on the MPI website. Submissions may also be the subject of requests for information under the Official Information Act 1982 (OIA).

The OIA specifies that information is to be made available to requesters unless there are sufficient grounds for withholding it, as set out in the OIA. Submitters may wish to indicate grounds for withholding specific

information contained in their submission, such as the information is commercially sensitive or they wish personal information to be withheld.

Any decision to withhold information requested under the OIA is reviewable by the Ombudsman.

Contents

Purpose

(1) The purpose of this risk management proposal (RMP) is to:

a) summarise the phytosanitary measures considered for managing pests that may be associated with the import of fresh rambutan (*Nephelium lappaceum*: Sapindaceae) fruit for consumption;

b) identify how the measures proposed in the draft import health standard (IHS) for "Fresh Rambutan for Consumption" effectively manage known biosecurity risks ; and

c) explain how these measures are consistent with New Zealand's domestic legislation and international obligations.

(2) The draft IHS is the subject of consultation under section 23(3) of the Biosecurity Act (1993). This RMP provides information to support the consultation on the draft IHS but is not itself the subject of consultation. However MPI will accept comments and suggestions on the RMP in order to improve future IHS consultations.

Scope

(3) This RMP lists the information and process used to determine the pest risk management measures proposed in the draft IHS for Fresh Rambutan for Consumption. The RMP includes:

- a summary of pests potentially associated with rambutan at the point of export from a country (Viet Nam) requesting market access for rambutan to New Zealand;
- a description of pre-export phytosanitary measures and their effectiveness considered for managing pests potentially associated with imported fresh rambutan.

(4) This RMP is in three parts:

- Part 1 provides the background and context used to inform development of the IHS for fresh rambutan for consumption from all countries.
- Part 2 provides information specific to the fresh rambutan for consumption pathway, and outlines the types of measures which may effectively manage risks associated with importing fresh rambutan for consumption from all countries
- Part 3 considers the regulated pests associated with fresh rambutan, and determines the appropriate measure to effectively manage risks associated with importing fresh rambutan for consumption from Viet Nam.

Background

(5) Rambutan is a tropical fruit which is not currently able to be imported into New Zealand.

(6) The government of Viet Nam has requested access for fresh rambutan for consumption to the New Zealand market. This request initiated an assessment of pests associated with this pathway.

(7) MPI conducted a pathway assessment visit in 2014 for rambutan from Viet Nam.

Part 1: Context

Domestic

(8) The New Zealand biosecurity system is regulated through the Biosecurity Act 1993. Section 22 of the Act describes the meaning of an IHS, and requires that the IHS specifies requirements to be met for the effective management of risks associated with importing risk goods (including plants and plant products) into New Zealand.

(9) The Ministry for Primary Industries (MPI) is the government authority responsible for the effective management of risks associated with the importation of risk goods into New Zealand (Part 3, Biosecurity Act 1993).

(10) MPI engages with interested parties and/or affected New Zealand stakeholders and the exporting country requesting market access during the development of an IHS.

(11) MPI follows MPI policies and procedures for the development of an IHS and consultation.

International

(12) Where possible, phytosanitary measures are aligned with international standards, guidelines, and recommendations as per New Zealand's obligations under Article 3.1 of the World Trade Organisation (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), WTO 1995 and section 23(4)(c) of the Biosecurity Act 1993.

(13) The SPS Agreement states that phytosanitary measures must not discriminate unfairly between countries or between imported or domestically produced goods, and where there is a choice of phytosanitary measures to reduce risk to an acceptable level, WTO members must select the least trade restrictive measure.

New Zealand's Biosecurity System

(14) New Zealand operates a biosecurity system for which the phytosanitary aspect (covering plant health) is a key part.

(15) No biosecurity system is capable of reducing risk to zero. The objective of the system is to reduce to an acceptable level the likelihood of entry and establishment of regulated organisms (including pests, diseases and weeds).

(16) An organism is 'regulated' by MPI if it could cause unacceptable economic consequences (i.e. likely to cause unacceptable economic, environmental, socio-cultural or human health impacts in New Zealand) if it were to enter and establish in New Zealand, provided the following conditions are met:

a) is not present in New Zealand; or

b) it is present but under official control in New Zealand;

c) it is able to establish and spread in New Zealand.

- Entry and establishment is defined as 'introduction' by the International Plant Protection Convention (IPPC).

(17) The New Zealand phytosanitary system focuses on ensuring that the most significant pests, for example economically important fruit flies, are unlikely to ever establish in New Zealand. The system also manages risk associated with all regulated pests.

(18) The focus of the IHS for plant-based goods is to manage unacceptable phytosanitary risks identified as being associated with the goods before arrival at the New Zealand border. The expectation is that commercial consignments of plants and plant products meet New Zealand's phytosanitary import requirements on arrival (risk is managed off-shore).

(19) MPI monitors the pathway performance related to each IHS to ensure it provides the expected level of protection. This is achieved through verification and inspection activities at the border (and where

possible, identification of pests detected) and audits of the export systems and critical control points contained in the *Export Plans*.

Importing Fresh Produce

(20) Fresh produce can only be imported subject to an IHS specifying the commodity, and from a country where MPI has approved the systems, programmes and standards for regulatory oversight by the National Plant Protection Authority (NPPO). The export system is subject to audit by MPI.

(21) In circumstances where regulated pests that would cause significant harm if they became established in New Zealand are associated with the commodity, MPI requires the exporting NPPO to negotiate an *Export Plan* (see paragraph 26) with MPI. Exports to New Zealand cannot occur until the *Export Plan* has been agreed by MPI.

Strength of measures

(22) Measures are required for regulated pests (see paragraph 17) where the 'probability of introduction and spread' on a pathway is unacceptable (i.e. if it is able to enter through the pathway, find a suitable host, and able to establish and spread in New Zealand).

(23) The strength of the measure required should be no more than necessary to manage the risk the organism poses. MPI has classified measures into three categories of increasing strength: *Basic Measures*, *Targeted Measures* or *MPI-Specified Measures*.

(24) The strength of measure required depends on the risk posed by the organism on the pathway. This risk is determined by a combination of the consequences the pest may cause if it was introduced into New Zealand and the likelihood that the pest will enter and establish from a pathway. For pests that would result in very high consequences, such as economically important species of fruit fly, *MPI-Specified Measures* are required. This is because these pests would cause significant consequences to New Zealand, even if the likelihood of them entering and establishing (risk) a transient population is low.

(25) The greater the risk or consequence a pest can cause, the greater the level of assurance MPI requires that the pest is not present in a consignment unless the pest has been rendered non-viable (dead or sterile from irradiation). For *Targeted* and/ or *MPI-Specified Measures* an *Export Plan* will be developed, based on an MPI pathway assessment visit (if required). The *Export Plan* will identify how *Targeted* and *MPI-Specified Measures* will be applied. The *Export Plan* must be negotiated with and approved by MPI, and is subject to audit and review by MPI.

(26) The proposed fresh rambutan IHS includes all measures accepted for pests assessed as being possibly associated with the commodity.

Part 2: Approach

Commodity Description

(27) "Fresh rambutan for consumption" is defined as commercially produced, harvested *Nephelium lappaceum* fruit with skin. The commodity may include a short stem but excludes flowers and leaves. The rambutan (fruit) is single-seeded round to oval fruit between 3-6 cm long with leathery peel covered with fleshy spines and firm whitish flesh.

(28) "Commercially produced" is defined as the production of export grade fruit sourced from production sites which grow rambutan for export under standard cultivation, pest-management, harvesting, disinfestation and packing activities. Infested, infected or damaged fruit must be discarded prior to packing.

a) Commercially produced rambutan are graded to remove:

- obviously damaged fruit, and plant material (such as leaves, stems and woody material) other than the fruit;
- all plant material from species other than *Nephelun lappaceum*.

b) Private consignments and products produced through non-commercial systems (for example, 'backyard' production) do not meet the definition of commercially produced, and are excluded from the scope of this RMP and the IHS Fresh Rambutan for Consumption.

Information Sources

(29) The following information was used to identify risk organisms associated with fresh rambutan and the appropriate measures to manage the risk of their introduction (entry and establishment) into New Zealand:

a) MPI 2016. Import risk analysis: fresh rambutan fruit from Viet Nam;

b) MPI 2014a. Vietnam rambutan pathway assessment report (Draft);

c) MPI 2014b. Generic pest risk assessment: Armoured scale insects (Hemiptera: Coccoidea: Diaspididae) on the fresh produce pathway (MPI, 2014).

d) MARD PPD 2014. Procedural rambutan cultural practices. Application of integrated pest management (IPM) and integrated commodity management (ICM). Recommendations applicable to codified production units destined for export to America under the framework of preclearance of irradiated fresh fruit for American market.

e) USDA APHIS 2009. Pest List for the Importation of Fresh Fruit of Litchi (*Litchi chinensis*), Longan (*Dimocarpus longan*), and Rambutan (*Nephelium lappaceum*) into the continental United States from ASEAN Countries.

f) USDA APHIS 2010. Importation of Rambutan (*Nephelium lappaceum*) fruit from Malaysia and Vietnam into the Continental United States: Risk Management Document.

g) USDA APHIS 2011. Importation of fresh fruit of litchi (*Litchi chinensis*), longan (*Dimocarpus longan*), and rambutan (*Nephelium lappaceum*) into the continental United States from ASEAN countries: A qualitative, pathway-initiated pest risk assessment; and

h) Relevant literature and database searches.

Assessment

(30) The above information sources were used to assess an organisms' potential to enter New Zealand via the fresh rambutan import pathway, be exposed to a suitable host, and establish and spread in New Zealand. The pest assessment process follows part 2.1 of the International Standard for Phytosanitary Measures (ISPM) 11: *Pest risk analysis for quarantine pests*, MPI import risk analysis procedures and considered:

a) Presence or absence in the exporting country;

b) Presence or absence in New Zealand;

c) Regulatory status in New Zealand;

d) Association with the commodity and pathway;

e) Potential for establishment and spread in New Zealand; and

f) Potential for economic consequences in New Zealand.

(31) All organisms identified as 'pests of concern' were assessed by MPI to determine the 'probability of introduction and spread' (entry into New Zealand, exposure to suitable hosts, establishment and spread) in New Zealand (following part 2.2 of ISPM 11).

Description of measures

(32) The biosecurity system in New Zealand operates a series of components or layers (pre-border, border, and post-border) that together provide a high level of assurance that pests are unlikely to establish in New Zealand. No one part of the system is able to achieve the necessary assurance on its own. The main components in the pre-border and border system include:

a) commercial production and packhouse activities (*Basic Measures*) to reduce pest prevalence on a commodity;

b) application of an additional measure to reduce pest prevalence on a commodity (*Targeted* and/ or *MPI-Specified Measure* where required);

c) official pre-export inspection and phytosanitary certification to verify that pre-export measures have been undertaken and effective as required by MPI and that the consignment is free from regulated pests;

d) on-arrival inspection may be conducted in New Zealand to verify pests are not present in a representative sample (e.g. no live regulated visible pests in a 600 unit sample);

e) remedial action (for example treatment) if a pest is detected prior to biosecurity clearance being given for a consignment.

(33) Measures of different strengths (*Basic*, *Targeted*, or *MPI-Specified*) are applied according to the risk of entry and establishment posed by a pest on the pathway and reduce the likelihood of introduction to a very low level on a consignment.

Basic Measures

(34) *Basic measures* are required to manage all organisms that could enter and establish in New Zealand. *Basic measure* pests are pests identified through risk assessment as possibly being on the pathway. *Basic Measures* include (but are not restricted to) the following required components:

Commercial production

(35) All fresh produce for export to New Zealand, regardless of the associated pests, must be commercially produced using a quality system, recognised standard cultivation, pest management, harvest and packaging activities.

(36) Commercial production of rambutan fruit includes:

a) Recognised standard cultivation
   - production site management and hygiene practices such as in-field weed control.

b) Pest management
   - grower pest monitoring;
   - grower management of pests and diseases.

c) Harvest activities
   - sorting of fruit to remove extraneous matter (such as plant material and excess soil) and non-export quality produce.

d) Packaging activities
   - removal of debris and visible pests from rambutan fruit;
   - rambutans packed into new and clean material;

- product security maintained following export certification to prevent pest re-infestation.

(37) All fresh produce for export to New Zealand must be of export grade to minimise the likelihood of infested or infected fresh produce entering the export supply chain.

(38) For many pests *Basic Measures* are sufficient to reduce their prevalence in a consignment to a very low level thus limiting their potential to establish and spread in New Zealand if they entered undetected.

Targeted Measures

(39) *Targeted Measures* are used to manage the risk of entry and establishment of pests that are unlikely to be sufficiently managed by *Basic Measures*.

(40) Pests which present a higher risk (consequence and likelihood of introduction) require measures of a higher strength (e.g. *Targeted* Measures) compared with those pathways where the risk is lower.

(41) An *Export Plan* is required for all commodities that may be associated with pests identified by MPI as requiring *Targeted Measures*. The components of an *Export Plan* may differ between countries and commodities because the growing systems and agricultural practices differ but can be similarly effective. The *Export Plan* provides a description of how the agreed *Targeted Measures* will be applied to manage these pests (where required) and is negotiated between New Zealand and the individual exporting country NPPO.

(42) *Targeted Measures* include a very wide range of options and provide MPI with the assurance that pest populations on the exported product are reduced to a level that will not enable the pest to establish a population in New Zealand.

(43) A *Targeted Measure* may also be efficacious against non-target pests.

(44) The following measures are some that may be considered for managing pests requiring *Targeted Measures*:

a) Country freedom;
   - additional measures or an *Export Plan* are not required where 'country freedom' status is recognised by MPI for the export country.

b) Pest free area;
   - MPI will audit the management of pest free areas for compliance with ISPM 4: *Requirements for the establishment of pest free areas*.

c) Pest free place of production;
   - MPI will audit the management of pest free place of production for compliance with ISPM 10: Requirements for the establishment of pests free places of production and pest free production sites.

d) Pest control activities (in-field);

e) Systems Approaches;
   - Systems Approach is composed of two or more independent measures, as negotiated between MPI and the exporting country;
   - independent measures may vary between exporting countries.

f) End-point treatment.

(45) *Targeted Measures* are subject to pathway assurance audit by MPI.

MPI-Specified Measures

(46) An *Export Plan* is required for all commodities that may be associated with pests identified by MPI as requiring *MPI-Specified Measures*.

(47) *MPI-Specified Measures* are required when the consequence of establishment of a pest is very high and where entry and establishment is likely as a result of the pathway.

a) The selection of an appropriate *MPI-Specified Measure* is based largely on quantitative data that supports a high level of phytosanitary assurance. Quantitative data may be supported by qualitative information, especially with respect to approval of a systems approach.

b) A *MPI-Specified Measure* may also be effective against non-target pests.

(48) Wherever possible, MPI uses ISPMs (or regional standards if applicable) to identify the appropriate requirements for imported plant commodities.

(49) *MPI-Specified Measures* are subject to pathway assurance audit by MPI.

Certification and verification

Pre-export inspection and phytosanitary certification

(50) Pre-export inspection and phytosanitary certification by the exporting NPPO of all commercially produced fresh produce for export to New Zealand is required to provide assurances of freedom from visually detectable regulated pests. Assurance is also required that measures for pests that are not visually detectable have been applied.

(51) The phytosanitary certification process includes:

a) verification that any *Basic*, *Targeted* and *MPI-Specified* Measures required by MPI have been met;

b) sampling and inspection to determine pest freedom;

i) a minimum sample of 600 randomly selected rambutan fruit must be visually inspected by the exporting country NPPO using official procedures. Ten times magnification must be used to ensure detection of cryptic or small pests. The visual inspection can include cutting rambutans to identify pests located within the fruit. Consistent with international practice, the inspected sample must be free from regulated pests.

ii) where any live regulated pest is found in the inspected lot, an appropriate measure must be applied (for example fumigation with an efficacious chemical) or the lot must be rejected for export to New Zealand.

c) any remedial action taken as agreed with MPI.

Verification on arrival in New Zealand

(52) A consignment will normally have a representative sample taken and inspected for the absence of regulated pests. Any reduction in the level of inspection from current on-arrival levels is based on sound evidence of the compliance of a pathway. In a few cases where a pathway is highly compliant inspections will be conducted on an audit basis to ensure ongoing compliance.

(53) When a consignment is found to be infested with live regulated pests on arrival in New Zealand, one of the following risk management activities will be applied:

a) reshipment of the consignment;

b) destruction of the consignment; or

c) treatment of the consignment. Treatment may include:

- re-conditioning to remove infested or infected fruit; or
- fumigation to kill regulated pests.

Part 3: Pest Risk Assessment and Management

(54) This section only includes an assessment of pests identified by the Import risk analysis: fresh rambutan fruit from Viet Nam (MPI 2016).

Summary of risk from pests potentially associated with the importation of fresh rambutan from Viet Nam

(55) Pests identified as potentially associated with rambutan produced in Viet Nam were assessed in MPI's import risk analysis of rambutan (MPI 2016). These include species that use the commodity for some part of their lifecycle, as well as species where there is existing evidence to suggest they have an opportunistic association with the commodity.

(56) Pests are defined as "Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products" (ISPM 5: *Glossary of Phytosanitary Terms*). Pests are categorised as a quarantine pest for New Zealand if the pest:

a) is not present in New Zealand or is not widely distributed and under official control; or
b) is a vector of a quarantine pest for New Zealand; or
c) is a different strain to the pests present in New Zealand and has a different impact (e.g. host range, pathogenicity); and
d) would cause unwanted harm if the pest could establish in New Zealand.

(57) Assessment of the 133 pests likely to be associated with rambutan identified 34 quarantine pests that present a potential risk on this import pathway because:

a) they are associated with rambutan fruit; and
b) are present in Viet Nam.

The other 99 pests do not present a risk on the pathway because they did not meet the criteria of paragraphs 56 and 57. Therefore they did not require additional assessment.

(58) Twenty seven of the 34 pests present a risk on the Viet Nam rambutan pathway (possibility of being on the product at point of export, capable of establishing and spreading in New Zealand and causing harmful economic consequences), as identified in Table 1 below, and are discussed further in this section.

a) The remaining seven organisms are not considered to present a risk on the pathway (unlikely to be on the product at point of export, or will not survive transit, or are not capable of establishing in New Zealand) and therefore do not require additional assessment.
b) A summary of the pest risk assessments undertaken in the IRA [MPI 2016] for the 34 pests is presented in Appendix 1.

Table 1. Regulated pest groups that present a risk on fresh rambutan from Viet Nam

Group	Pests	
Insects	*Bactrocera dorsalis*	*Pseudococcus comstocki*
	Dysmicoccus brevipes	*Pseudococcus cryptus*
	Dysmicoccus neobrevipes	*Pseudococcus jackbeardsleyi*
	Exallomochlus hispidus	*Rastrococcus tropicasiaticus*
	Ferrisia virgata	*Tessaratoma papillosa*
	Maconellicoccus hirsutus	*Ceroplastes floridensis*
	Nipaecoccus viridis	*Ceroplastes rubens*
	Paracoccus interceptus	*Ceroplastes rusci*
	Phenacoccus madeirensis	*Coccus viridis*
	Planococcus lilacinus	*Drepanococcus chiton*
	Planococcus litchi	*Conogethes punctiferalis*
	Planococcus minor	*Cryptophlebia ombrodelta*
	Pseudococcus aurantiacus	*Scirtothrips dorsalis*

Group	Pests
Mites	*Eutetranychus orientalis*

Determination of phytosanitary measures included in the draft IHS

(59) MPI requires measures to be applied to reduce to a very low level the risk of entry and establishment of a pest on a pathway. Attaining zero biosecurity risk is not possible in any system.

(60) The following phytosanitary measures have been identified by MPI to manage pests associated with the importation of fresh rambutan from Viet Nam (refer to Appendix 1 for reasons and supporting evidence).

a) The options for additional measures are not specific to one exporting country. The options require agreement by MPI and are documented in an *Export Plan* describing how they will be applied.

b) A measure identified for one pest may also reduce the likelihood of entry and establishment for **other pests** on the import pathway.

Measures identified for specific pests

(61) The following reasons and evidence summarised from MPI (2016), support this determination (also see Appendix 1):

Coccidae (Soft Scale Insects)

(62) Five species of Coccidae present a potential risk on rambutan imported from Viet Nam:

- Ceroplastes floridensis
- Ceroplastes rubens
- Ceroplastes rusci
- Coccus viridis
- Drepanococcus chiton

(63) *C. floridensis, C. rubens, C. rusci, C. viridis* and *D. chiton* pose a low risk to New Zealand because:

a) If they were to enter on rambutan fruit they would be limited in their capacity to move to a suitable host;

b) Tropical species will be restricted in their distribution by climate;

c) If these species could establish, current control measures will limit their impact to commercial hosts and the economic and environmental impact is likely to be low.

(64) Basic Measures are justified and sufficient to manage the risk from Coccidae (soft scales) associated with rambutan from Viet Nam because:

a) Commercial production activities will reduce populations of Coccidae in rambutan orchards.

i) Monitoring for plants displaying signs/symptoms of infestation during production will identify affected plants, resulting in pest controls being applied (see Commercial Production). Coccidae damage plants directly by feeding on phloem, and indirectly by producing honeydew, which promotes growth of sooty mould. Heavy infestations may cause wilting of leaves and stems, reduce photosynthetic efficiency and growth and disfigure fruit.

b) Harvest, cleaning and packing activities will reduce the likelihood of Coccidae eggs, crawlers and adults being associated with rambutan at export.

i) Coccidae often lay eggs on leaves and in the axils of stems. The commodity description specifies 'commercially produced, harvested fruit, which may include a short stem but excludes flowers and leaves' (see Commodity Description), which will limit the introduction of eggs.

ii) Eggs are usually laid under the adult females, and larvae remain with their mothers for several days after hatching, increasing the likelihood that they will be detected.

iii) Mobile crawlers are delicate and likely to be damaged or removed during harvest and packing.

iv) Adult Coccidae are likely to be detected during cleaning, as they are relatively large (1-4 mm long) and covered with a thick white or pinkish-white wax.

v) Coccidae secrete sticky honeydew which in heavy infestations promotes the growth of sooty mould.

vi) The IHS specifies 'commercially produced' export grade fruit (which includes grading to remove obviously damaged fruit). Heavily infested and damaged fruit will not be export-grade and therefore will be removed during grading and packaging (see Commodity Description)

c) Coccidae are likely to be obvious during official pre-export inspection by the exporting NPPO (see Pre-export inspection and phytosanitary certification).

i) Coccidae that are not detected and removed during production, harvest, grading and packing are likely to be detected during pre-export NPPO visual inspection (see Pre-export inspection and phytosanitary certification).

ii) Detection of *C. floridensis*, *C. rubens*, *C. rusci*, *C. viridis* or *D. chiton* during phytosanitary inspection will require remedial action prior to export certification.

Pseudococcidae (Mealybugs)

(65) Sixteen species of Pseudococcidae present a potential risk on rambutan imported from Viet Nam:

- *Dysmicoccus brevipes*
- *Dysmicoccus neobrevipes*
- *Exallomochlus hispidus*
- *Ferrisia virgata,*
- *Maconellicoccus hirsutus*
- *Nipaecoccis viridis*
- *Paracoccus interceptus*
- *Phenacoccus madeirensis*
- *Planococcus lilacinus*
- *Planococcus litchi*
- *Planococcus minor*
- *Pseudococcus aurantiacus*
- *Pseudococcus comstocki*
- *Pseudococcus cryptus*
- *Pseudococcus jackbeardsleyi*
- *Rastrococcus tropicasiaticus*

(66) These species of Pseudococcidae pose a low risk to New Zealand because:

a) If they were to enter on rambutan fruit they would be limited in their capacity to move to a suitable host;

b) Tropical species will be restricted in their distribution by climate;

c) If these species could establish, current control measures will limit their impact to commercial hosts and the economic and environmental impact is likely to be low.

(67) *Basic Measures* are justified and sufficient to manage the risk from Pseudococcidae (mealybugs) associated with rambutan from Viet Nam because:

a) Commercial production activities will reduce populations of Pseudococcidae in rambutan orchards.

i) Monitoring for plants displaying signs/symptoms of infestation during production will identify affected plants, resulting in pest controls being applied (see Commercial Production). Pseudococcidae damage plants directly by feeding on phloem, and indirectly by producing honeydew, which promotes growth of sooty mould. Heavy infestations may cause wilting of leaves and stems, reduce photosynthetic efficiency and growth and disfigure fruit.

b) Harvest, cleaning and packing activities will reduce the likelihood of Pseudococcidae eggs, crawlers and adults being associated with rambutan at export.

i) Pseudococcidae often lay eggs on leaves and in the axils of stems. The commodity description specifies 'commercially produced, harvested fruit, which may include a short stem but excludes flowers and leaves' (see Commodity Description), which will limit the introduction of eggs.

ii) Mobile crawlers are delicate and likely to be damaged or removed during harvest and packing

iii) Adult Pseudococcidae range from (1-5 mm long) and are therefore visually detectable,

iv) Body colours of adult Pseudococcidae differ between species; grey, pink, yellow. All species have varying degrees of waxy filaments (usually whitish) covering the body, which will increase the likelihood of detection;

v) Pseudococcidae often secrete sticky honeydew which in heavy infestations promotes the growth of sooty mould which is visually detectable;

vi) The IHS specifies 'commercially produced' export grade fruit (which includes grading to remove obviously damaged fruit). Heavily infested and damaged fruit will not be export-grade and therefore will be removed during grading and packaging (see Commodity Description).

c) Pseudococcidae are likely to be detected during visual inspection.

i) Most Pseudococcidae that are not detected and removed during production, harvest, grading and packing are likely to be detected during pre-export NPPO visual inspection (see Pre-export inspection and phytosanitary certification).

ii) Detection of *D. brevipes, D. neobrevipes, E. hispidus, F. virgata, M. hirsutus, N. viridis, P. interceptus, P. madeirensis, P. lilacinus, P. litchi, P. minor, P. aurantiacus, P. comstocki, P. cryptus, P. jackbeardsleyi* ,and *R. tropicasiaticus* will require remedial action prior to export certification.

Eutetranychus orientalis (mite)

(68) *Eutetranychus orientalis* poses a low risk to New Zealand because:

a) most rambutan fruit will arrive in July to September. If *E. orientalis* was to enter at this time, establishment is likely to be limited by winter climatic conditions.

b) if *E. orientalis* was to enter on rambutan fruit, it would be in low numbers and reproduction would be limited by the requirement for a mating pair to find each other to reproduce sexually;

c) if *E. orientalis* was to establish its spread of *E. orientalis* will be restricted by climate (warm temperature and low humidity);

d) if *E. orientalis* could establish, damage is likely to be limited to occasional outbreaks on citrus crops in warmer parts of New Zealand, so the overall economic impact is likely to be low.

(69) *Basic Measures* are justified and sufficient to manage the risk from *Eutetranychus orientalis*, because:

a) Commercial production will reduce populations of *E. orientalis* in rambutan orchards.

i) Monitoring for plants displaying signs/symptoms of infestation during production will identify affected plants, resulting in pest controls being applied (see Commercial Production). Heavy infestations of *E. orientalis* cause yellowing of leaves, leaf fall and die-back of branches (EFSA, 2013).

b) Harvest and packing activities will reduce the likelihood of *E. orientalis* being associated with rambutan fruit at export.

i) *E. orientalis* eggs are laid on leaves. Larvae, nymphs and adults are primarily associated with leaves, although they may feed on the green tips of the spines on rambutan fruit. The specified commodity description 'commercially produced, harvested fruit, which may include a short stem but excludes flowers and leaves', means there will be no leaf material associated with the imported rambutan fruit (see Commodity Description).

ii) Removal of leaves during cleaning and grading will remove *E. orientalis* eggs and the majority of larvae, nymphs and adults.

c) *E. orientalis* are likely to be detected during visual inspection.

i) *E orientalis* are most likely to be associated with green tips of the spines of the rambutan fruit.

ii) *E. orientalis* that are not detected and removed during production, harvest, grading and packing are likely to be detected during pre-export NPPO visual phytosanitary inspection(see Pre-export inspection and phytosanitary certification), because:

- 10 x magnification will be used to aid detection;

iii) Detection of *E. orientalis* will require remedial action prior to export certification.

Scirtothrips dorsalis (thrips)

(70) *Scirtothrips dorsalis* poses a low risk to New Zealand because:

a) rambutan will arrive in New Zealand in the winter and outdoor establishment of *S. dorsalis,* which is a subtropical/tropical species, is unlikely to start from winter arrivals;

b) if *S. dorsalis* could establish outdoor populations in New Zealand it will be restricted to warmer areas of New Zealand;

c) if *S. dorsalis* could establish, economic consequences are likely to be limited to individual growers in northern regions and overall economic impact is likely to be low.

(71) *Basic Measures* are justified and sufficient to manage the risk from *Scirtothrips dorsalis* because:

a) Commercial production activities will reduce populations of *S. dorsalis* in rambutan orchards.

i) Monitoring for plants displaying signs/symptoms of infestation during production will identify affected plants, resulting in pest controls being applied (see Commercial Production). Infestations of *S. dorsalis* cause discoloration and early senescence of leaves and distortion of fruit. Severe infestations can result in complete defoliation and crop loss.

b) Harvest activities will reduce the likelihood of adult *S. dorsalis* being associated with fruit at export.

i) Adults are mobile so may not remain associated with fruit when it is harvested.

c) Packing activities would detect signs of a severe infestation of *S. dorsalis* in rambutan fruit.

i) The IHS specifies 'commercially produced' export grade fruit (which includes grading to remove obviously damaged fruit). Infested and misshapen fruit will not be export-grade and therefore will be removed during grading and packaging (see Commodity Description).

d) *S. dorsalis* are likely to be detected during visual inspection.

i) *S. dorsalis* that are not detected and removed during production, harvest, grading and packing are likely to be detected during pre-export NPPO visual inspection (see Pre-export inspection and phytosanitary certification) because:

- 10 x magnification will be used to aid detection.

ii) Detection of *S. dorsalis* will require remedial action prior to export certification.

***Tessaratoma papillosa* (stink bug)**

(72) *Tessaratoma papillosa* poses a low risk to New Zealand because:

a) if *T. papillosa* was to enter on rambutan fruit, establishment would be limited by the requirement for a mating pair to find each other to reproduce sexually;

b) *T. papillosa* distribution is likely to be limited by climate;

c) none of New Zealand's commercial crop species are main hosts of *T. papillosa.* If it could establish, the economic impacts are likely to be low and limited to warmer parts of the country.

(73) Basic measures are justified and sufficient to manage the risk from *Tessaratoma papillosa* because:

a) Commercial production activities will reduce populations of *T. papillosa* in rambutan orchards.

i) *T papillosa* sucks the juice of young shoots, leaves and fruits. Although it may be associated with mature fruit, it usually causes premature fruit drop (Australian Department of Agriculture Fisheries and Forestry, 2003). Monitoring during production will identify affected plants, resulting in pest controls being applied (see Commercial Production) to reduce the number of infested plants to a very low level.

ii) Harvest activities will reduce the likelihood of *T. papillosa* nymphs and adults being associated with rambutan fruit.

iii) Nymphs and adults are mobile and are likely to move off fruit during fruit-handling.

iv) Nymphs instinctively fall to the ground when disturbed.

b) Harvesting, cleaning and packing activities will remove the majority of *T. papillosa* eggs.

i) *T. papillosa* eggs are usually laid on the underside of leaves, but have been observed on fruits. The specified commodity description 'commercially produced, harvested fruit, which may include a short stem but excludes flowers and leaves', means there will be no leaf material associated with the imported rambutan fruit (see Commodity Description).

ii) Nymphs and adults are colourful, between 5mm to 150mm in length and are easily detected by visual inspection during grading. Nymphs and adults are likely to move when disturbed.

c) *T. papillosa* are likely to be detected during visual inspection.

i) *T. papillosa* that are not detected and removed during production, harvest, grading and packing are likely to be detected during pre-export NPPO visual phytosanitary inspection (see Pre-export inspection and phytosanitary certification). *T. papillosa* eggs are white-cream and relatively large (~2.5 mm diameter) and usually laid in clusters. Nymphs and adults are colourful, between 5mm to 150mm in length, and are likely to move when disturbed, which increases the likelihood that they will be detected.

ii) Detection of *T.papillosa* will require remedial action prior to export certification.

Conogethes punctiferalis and *Cryptophlebia ombrodelta* (moths)

(74) *Conogethes punctiferalis* and *Cryptophlebia ombrodelta* pose a moderate risk to New Zealand because:

a) many of New Zealand's important commercial crops are recorded as major hosts of *C. punctiferalis* and/or *C. ombrodelta*, including apple, apricot, avocado, sweet cherry, peaches, pears and oranges.

b) if *C. punctiferalis* or *C. ombrodelta* were to enter on rambutans, establishment would be limited by the requirement for a mating pair to find each other to reproduce sexually;

c) climate in warmer areas of New Zealand is likely to be suitable for establishment of a population of *C. punctiferalis* or *C. ombrodelta.*

d) mature larva of *C. punctiferalis* and *C. ombrodelta* can overwinter and emerge when conditions become favourable.

e) if *C. punctiferalis* or *C. ombrodelta* established, the economic impacts are likely to be moderate due to direct damage to fruit crops, increased pest management costs and potential for restricted access to overseas markets.

(75) *Targeted Measures* are required in addition to *Basic Measures* to manage the risk from eggs and internally feeding larvae of the moth species *Conogethes punctiferalis* and *Cryptophlebia ombrodelta*.

(76) *Targeted Measures* will effectively manage risk from *C. punctiferalis* and *C. ombrodelta* eggs and larvae, either by excluding them, reducing populations to a negligible level, limiting their potential for establishment in the New Zealand environment, or removing or eliminating them from the pathway.

(77) Pupae are unlikely to follow the pathway and do not require *Targeted Measures*. The damage done by *C. punctiferalis* during larval development to the stage of pupation causes fruit to die and turn brown, so infected fruit are likely to be detected and discarded during harvesting and packing. Pupae of *C. ombrodelta* are likely to be detected prior to export, as development of larvae to the stage of pupation causes noticeable damage, and larvae pupate outside the fruit.

(78) Adults are unlikely to follow the pathway, as they are likely to move off the fruit or to be detected during harvest and packing, and do not require *Targeted Measures*. *Targeted Measures* options for eggs and larvae include:

Pest Exclusion

(79) Pest freedom status either at the country, area or production site will effectively exclude *C. punctiferalis* and *C. ombrodelta* from the pathway. The options for pest freedom are as per the international standards for phytosanitary measures (ISPMs):

a) Country freedom;

- Additional measures are not required where 'country freedom' status is recognised by New Zealand for the export country.

b) Pest free area (PFA);

- PFAs managed as per ISPM 4: *Pest free areas* or based on historical absence as per ISPM 8: *Determination of pest status in an area*; and recognised as a PFA by MPI.

c) Pest free place of production (PFPP)

- PFPP managed in accordance with ISPM 10: Requirements for the establishment of pest free places of production and pest free production sites and recognised by MPI.

Pest Reduction

(80) *C. punctiferalis* and *C. ombrodelta* can be reduced to a negligible level through an effective systems approach. A systems approach is comprised of two or more independent measures (*as per* ISPM 14: *The use of integrated measures in a systems approach for pest risk management*). The following are considered suitable options as independent measures:

a) In-field pest control measures can reduce the incidence of *C. punctiferalis* and *C. ombrodelta* during production. These options include:

i) Removal/destruction of fallen fruit which act as reservoirs for moth larvae and eggs;

ii) Insect traps (light, yellow and lure traps);

iii) An effective moth trapping/mating disruption programme to reduce in-orchard moth populations;

iv) Use of natural predators (insect feeding reptiles and arthropods);

v) Fruit bagging 20 days after fruit formation to limit moth infestation;

vi) Pesticide application supported by official crop monitoring;

- Monitoring activities are likely to detect infestations of C. punctiferalis or C. ombrodelta at rambutan production sites, and effective insecticides can be applied to manage infestations.

b) Export eligibility:

i) If *C. punctiferalis* or *C. ombrodelta* is detected either during rambutan production, at post-harvest grading and packing, or at pre-export NPPO inspection, then the crop or consignment is ineligible for export unless an effective phytosanitary measure is applied (see irradiation below).

ii) Feeding and development of *C. punctiferalis* larvae inside the rambutan fruit cause browning and death in infected clusters. *C. ombrodelta* larvae feed on seeds, leading to fruit drop.

Pest Removal or Elimination

(81) The risk from *C. punctiferalis* and *C. ombrodelta* can be reduced to a negligible level through the application of an efficacious treatment such as irradiation.

a) Irradiation at an absorbed dose of 250 Gy is effective at inhibiting development of immature stages of *C. ombrodelta*, preventing adult eclosion in pupae and preventing adults from producing viable eggs (Follett 2004, Follett & Lower 2000).

b) Irradiation of *C. punctiferalis* at 250Gy is consistent with other MPI IHSs for capsicum from Australia and longan and lychee from Thailand.

c) Treatment by irradiation must be at an MPI-recognised facility in accordance with the requirements of ISPM 18: *Guidelines for the use of irradiation as a phytosanitary measure*.

d) Irradiation of rambutan is approved by Food Standards Australia New Zealand

Bactrocera dorsalis (fruit fly)

(82) *Bactrocera dorsalis* poses a high risk to New Zealand because:

a) many of New Zealand's important commercial crops are recorded as major hosts of *B dorsalis*, including apple, apricot, sweet cherry, avocado, and tomato.

b) if *B. dorsalis* was to enter on rambutans, it is likely that individual fruit would be infested with several eggs or larvae, increasing the likelihood of mating pairs finding one another and reproducing sexually.

c) *B. dorsalis* is likely to be able to establish seasonal populations (>1 generation) in restricted distributions during the warmer months.

d) if *B. dorsalis* established even a transient population, the economic impacts are likely to be high, due to direct damage to fruit crops and disruptions to trade.

(83) *MPI-Specified Measures* are required in addition to Basic Measures for *B. dorsalis.*

(84) *MPI-Specified Measures* will effectively manage risk from *B. dorsalis* either by excluding *B. dorsalis*, or by applying a treatment that is efficacious for *B. dorsalis* to the commodity, removing or eliminating them from the pathway. *MPI-Specified Measures* options include:

Pest Exclusion

(85) Pest freedom status either at the country or area will effectively exclude *B. dorsalis* from the pathway. MPI specifies the following options for pest freedom as per the international standards for phytosanitary measures (ISPMs):

a) Country freedom;

- Additional measures are not required where 'country freedom' status is recognised by New Zealand for the export country.

b) Pest free area (PFA);

- PFAs managed as per ISPM 26 Establishment of pest free areas for fruit flies (Tephriditae); and recognised as a PFA by MPI.

Pest Removal or Elimination

(86) The risk from *B. dorsalis* can be reduced to a negligible level through the application of an efficacious treatment such as irradiation:

a) Irradiation is recognised internationally as an efficacious phytosanitary measure for Tephritidae fruit flies in accordance with ISPM 28 - Annex 7, where a treatment with a minimum absorbed dose of 150Gy to Tephritidae eggs and larvae is known to prevent adult fruit fly emergence from pupae (99.9968% efficacy at the 95% confidence level) (ISPM 28 PT7; Follett & Armstrong 2004).

b) Treatment by irradiation must be at a MPI-recognised facility and in accordance with the requirements of ISPM 18: *Guidelines for the use of irradiation as a phytosanitary measure*.

c) Irradiation of rambutan is approved by Food Standards Australia New Zealand

Summary of proposed categories of measures

(87) MPI considers the pest risks associated with the importation of fresh rambutan will be effectively managed by applying a combination of *Basic, Targeted* and *MPI-Specified Measures* (Table 2, Figure 1), which will be negotiated in an *Export Plan*, specifically:

- In-field practices and pest controls;
- Harvest and packhouse activities;
- Irradiation treatment at 150Gy for fruit fly or; 250Gy to include Lepidoptera pests;
- Pre-export inspection and certification, overseen by the exporting country NPPO;
- Audit of the *Export Plan* by MPI and the exporting NPPO.

(88) Each step in the export system reduces the likelihood of pests being present on the pathway. MPI will verify and inspect the consignment to ensure the requirements in the IHS have been met. Non-compliant consignments will be treated, re-shipped or destroyed.

(89) The measures MPI has identified as necessary to manage pests associated with rambutan are described below:

Table 2. Measures required to manage the risk associated with the rambutan import pathway.

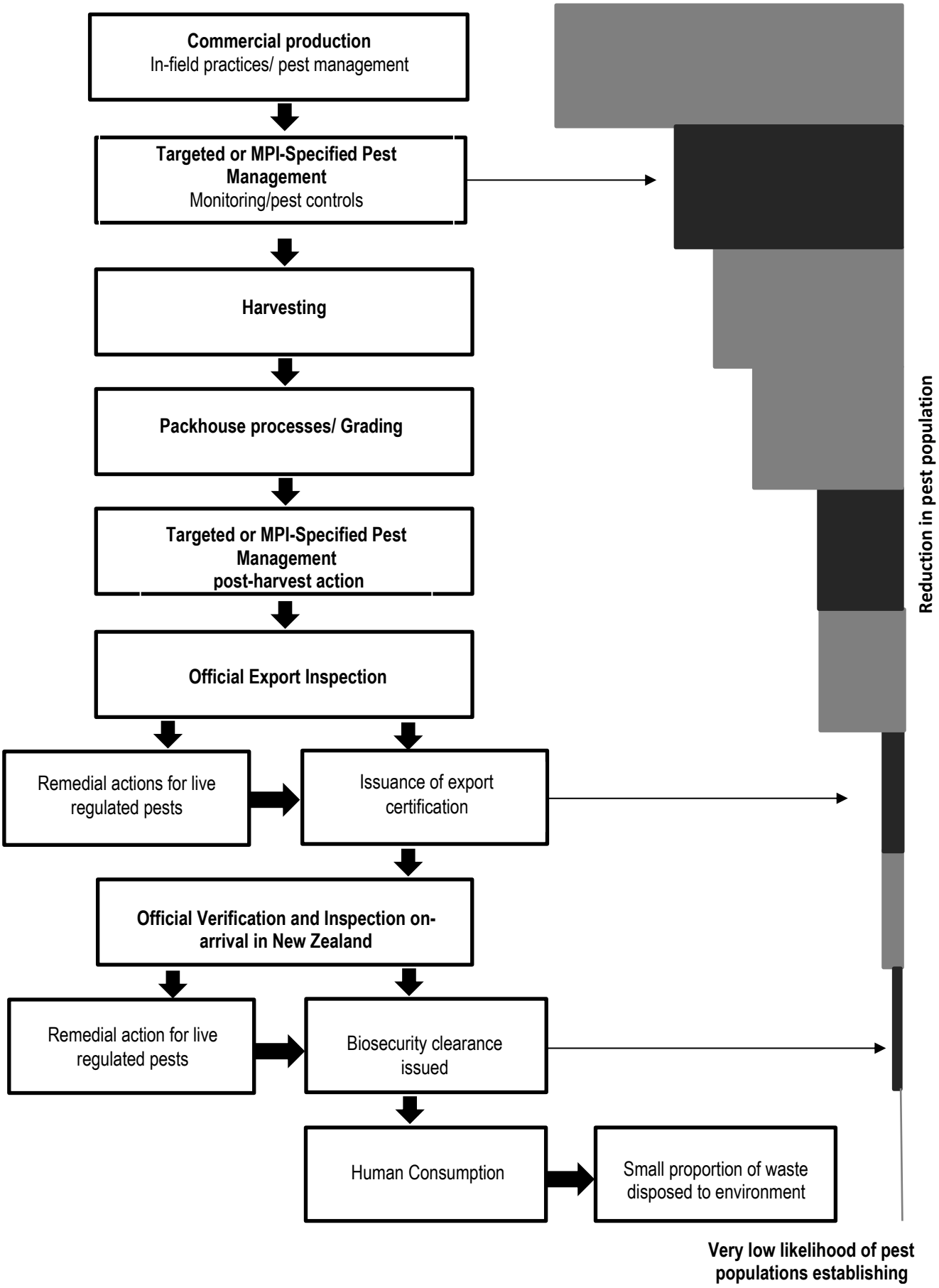
Organism type	Basic Measures	Basic plus Targeted Measures	Basic plus MPI-Specified Measures
Arthropods	*Dysmicoccus brevipes* *Dysmicoccus neobrevipes* *Eutetranychus orientalis* *Exallomochlus hispidus* *Ferrisia virgata* *Maconellicoccus hirsutus* *Nipaecoccus viridis* *Paracoccus interceptus* *Phenacoccus madeirensis* *Planococcus lilacinus* *Planococcus litchi* *Planococcus minor* *Pseudococcus aurantiacus* *Pseudococcus comstocki* *Pseudococcus cryptus* *Pseudococcus jackbeardsleyi* *Rastrococcus tropicasiaticus* *Ceroplastes floridensis*	*Conogethes punctiferalis* *Cryptophlebia ombrodelta*	*Bactrocera dorsalis*

Organism type	Basic Measures	Basic plus Targeted Measures	Basic plus MPI-Specified Measures
	Ceroplastes rubens *Ceroplastes rusci* *Coccus viridis* *Drepanococcus chiton* *Tessaratoma papillosa* *Scirtothrips dorsalis*		

(90) The measures contained in the IHS are subject to regular review based on pathway compliance, emerging risk assessment, new information/intelligence, and results of audit of the *Export Plan*.

(91) MPI will monitor interceptions of all regulated pests (and hitchhikers) and the appropriateness/ effectiveness of phytosanitary measures during trade.

Figure 1. Layers of biosecurity protection for the import of rambutan into New Zealand



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Appendix 1: Summary of justification for measures

The thirty-four organisms listed in Table 3 (below) went through a risk assessment process for the importation of fresh rambutan from Viet Nam. Evidence from these pest risk assessments is summarised in Table 3 to assist in determining whether or not measures are justified for each organism. The PRAs are found in the IRA: Fresh rambutan fruit from Vietnam (MPI 2016) and Generic Pest Risk Assessment: Armoured scale insects (Hemiptera: Coccoidea: Diaspididae) on the fresh produce pathway (MPI, 2014).

Some organisms may not have been identified as requiring a measure in this RMP (e.g. *Basic*, *Targeted* or *MPI-Specified*). However, as they are regulated organisms, if they are intercepted on the pathway an on-arrival remedial action may be required (e.g. fumigation) prior to the fresh rambutans being given a clearance for their entry into New Zealand. If no suitable or approved treatment is available, the consignment will be reshipped or destroyed.

MPI may review the pests associated with a pathway (and their management) if new information becomes available, including in the following circumstances:

c) a change in host status;
d) pest status and prevalence;
e) frequent interception on imported fresh rambutans on arrival in New Zealand; or
f) a risk on imported fresh rambutans is identified in MPI's Emerging Risks System.

Table 3. Summary of the evidence to support justification of a measure for organisms identified in the IRA: Fresh rambutan fruit from Viet Nam (MPI 2016).

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
Acari (mites)	***Eutetranychus orientalis*** (Klein) [Tetranychidae]	Has the potential to be a quarantine pest on this pathway.	*Eutetranychus orientalis* is associated with the pathway.	- *Eutetranychus orientalis* is present in Viet Nam. - Is not recorded in New Zealand. - Is primarily associated with leaves, but may be associated with the green tips of the spines of rambutan fruit.	**Yes**
		And is likely to establish and spread if it entered NZ.	*Eutetranychus orientalis* is capable of entering through the pathway, being exposed to hosts, and establishing and spreading within New Zealand.	Entry: - All life stages of *E. orientalis* (eggs, larvae, nymphs and adults) are very small (<0.5 mm) and may go undetected during harvesting, handling, cleaning and packaging, especially given the spiny morphology of the fruit. - *E. orientalis* may be able to survive transportation conditions (EFSA 2013). Exposure: - A small proportion of imported rambutan peel is likely to be discarded in an open compost providing a mechanism for *E. orientalis* to be exposed to the environment. - *E. orientalis* is polyphagous. Potential hosts of economic importance to NZ include capsicum, citrus, pumpkin, avocado, peach, pear, grape and maize (EFSA 2013). - *E. orientalis* can spread by crawling to nearby hosts and can be dispersed by wind currents.	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
				Establishment and spread: - Summer environmental conditions in the Napier and Gisborne areas of New Zealand are likely to be conducive to establishment of *E. orientalis.* However, conditions in July to September are likely to be too wet and cold, and this is when most rambutan from Viet Nam will arrive. - A range of hosts are found in home gardens and are also grown commercially. - *E. orientalis* is likely to enter in small numbers rather than groups, reducing the likelihood of a mating pair finding each other and limiting opportunities for sexual reproduction.	
		And has the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	*Eutetranychus orientalis* is capable of causing economic impacts if it established in New Zealand.	- *E. orientalis* is a notable pest of citrus and could cause economic impacts to the NZ citrus industry. There may be potential for occasional outbreaks on citrus and other hosts requiring control during periods of summer drought. The export value of the citrus crop is small (~7 million in 2014), limiting the economic impact - Although capsicum, citrus, pumpkin, avocado, peach, pear, grape and maize are recorded as potential hosts (EFSA 2013), no reports were found of *E. orientalis* causing economically significant damage to these hosts.	
Diptera (flies)	***Bactrocera dorsalis*** **(**Hendel) [Tephritidae]]	Has the potential to be a quarantine pest on this pathway	*Bactrocera dorsalis* is associated with the pathway	- *B. dorsalis* is widespread in Viet Nam. - Is not present in New Zealand. - Is known to be associated with rambutan fruit in Southeast Asia, with infestation rates estimated at approximately 0.021%, and ~3-4 larvae per infested fruit (McQuate *et al* 2000).	**Yes**

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		And is likely to establish at least a transient population if it entered NZ.	*Bactrocera dorsalis* is capable of entering through the pathway, being exposed to hosts, establishing a seasonal population and spreading within New Zealand.	Entry: - MPI has intercepted *B. dorsalis* on Longan fruit imported from South East Asia. - Eggs and larvae of *B. dorsalis* are internal to rambutan fruit and may go undetected during harvesting, handling, cleaning and packaging, especially given the spiny morphology of the fruit. Exposure: - A small proportion of infested rambutan fruit is likely to be discarded in an open compost. - *B. dorsalis* would need to complete larval development within the fruit, pupate in soil or compost, emerge as adults and fly to a suitable host. - Suitable hosts for *B. dorsalis* include apple, apricot, avocado, capsicum, citrus, passionfruit, avocado, peach, pear, plum, and tomato. Many of these species are grown in home gardens and/or commercially in New Zealand. Establishment and spread: - A single rambutan fruit may contain 3-4 eggs or larvae, therefore it is likely that a mating pair could find each other and reproduce. - The New Zealand climate is too cool to allow establishment of a permanent population of *B dorsalis.* - A range of hosts are found in home gardens and grown commercially. - A seasonal population (>1 generation) could establish in summer conditions in some regions (Northland, Waikato, Bay of Plenty)	
		And has the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	*Bactrocera dorsalis* is capable of causing economic impacts if it established in New Zealand	- *B dorsalis* is highly polyphagous, and many of New Zealand's important commercial crops are recorded as major hosts, including apple, apricot, sweet cherry, avocado, and tomato. - The annual combined domestic and export sales value of these crops is approximately $0.9 billion. - Establishment of a seasonal population of *B. dorsalis* has potential for adverse impacts on access to overseas markets.	
Hemiptera: Coccidae (soft scale insects)	***Ceroplastes floridensis*** Comstock [Coccidae] ***Ceroplastes rubens*** Maskell [Coccidae] ***Ceroplastes rusci*** (Linnaeus) [Coccidae] ***Coccus viridis*** (Green) [Coccidae] ***Drepanococcus chiton*** (Green) [Coccidae]	These species of soft scale have the potential to be a quarantine pest on this pathway.	These species of soft scale are associated with the pathway.	- *Ceroplastes floridensis*, *C rubens*, *C rusci*, *Coccus viridis* and *Drepanococcus chiton* are present in Viet Nam. - Are not recorded in New Zealand. - Are associated with rambutan fruit.	**Yes**

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		And are likely to establish and spread if they entered NZ.	Soft scales associated with rambutan from Viet Nam are capable of entering through the pathway, being exposed to hosts, and establishing and spreading within New Zealand.	Entry: - MPI often intercepts viable soft scale adults and eggs on fresh produce at the New Zealand border (MPI 2014), indicating that some soft scales can survive transportation conditions. - Soft scale adults range from 2-4 mm in length and are visually detectable but low level infestations may go undetected during harvesting, handling, cleaning and packaging, due to the complex spiny architecture of rambutan fruit. Exposure: - A small proportion of imported rambutan peel is likely to be discarded in an open compost providing a mechanism for imported soft scales to be exposed to the environment. - *Ceroplastes floridensis*, *C rubens*, *C rusci*, *Coccus viridis* and *Drepanococcus chiton* are polyphagous (Garcia *et al,* 2016). Potential hosts, such as avocado, citrus, grapes, kumara, peach, plum, pear and *Solanum* species are widely grown in home gardens and/or commercially in New Zealand. - Soft scales have very limited mobility. In the mobile crawler stage, they can spread by crawling to nearby hosts. - The mobile crawler stage is delicate and susceptible to environmental extremes. Survival rates of crawlers are likely to be low. Establishment and spread: - The climate in parts of New Zealand is assumed to be suitable for the establishment of all these species. Temperatures in some parts of New Zealand may be below the lower threshold for crawler development for the species with tropical distributions. - A range of hosts are found in home gardens and grown commercially. - Spread is likely to be constrained by the fragility and limited mobility of soft scale crawlers. - *Ceroplastes floridensis, C rubens, Coccus viridis* and *Drepanococcus chiton* are parthenogenetic (CPC 2016a, 2016b and 2016d; Ibrahim, 1994). Males are unknown in *C floridensis*, but have been reported in some countries for the other species. These species could reproduce and spread from single imported female scales, if any were to survive through the vulnerable crawler stage to reproductive maturity. - *C. rusci* requires both males and females to reproduce (CPC 2016c), so spread is likely to be limited by the requirement for a mating pair to find each other.	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		And have the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	Soft scales associated with rambutan from Viet Nam are capable of causing economic impacts if they established in New Zealand.	- Soft scales associated with the rambutan pathway could cause production losses to a range of economically important crops such as avocado, citrus, grapes, pip fruit, and stone fruit grown in NZ. - Soft scales cause economic damage directly by feeding on phloem, and indirectly by producing honeydew, which promotes growth of sooty mould. Heavy infestations reduce photosynthetic efficiency of hosts, curbing growth and disfiguring fruit. - Commercial impacts of introduced soft scales may be mitigated by existing control practices for the soft scale *Ceroplastes destructor,* and by the presence of natural enemies in NZ (MPI 2014). - Economic impacts of soft scale species with tropical distributions would likely be limited to warmer northern areas of New Zealand where they could establish.	
Hemiptera: pseudococcidae (mealybugs)	***Dysmicoccus brevipes*** (Cockerell) ***Dysmicoccus neobrevipes*** (Beardsley) ***Exallomochlus hispidus*** **(**Morrison) ***Ferrisia virgata Cockerell*** ***Maconellicoccus hirsutus*** **(**Green, 1908) ***Nipaecoccis viridis*** **(**Newstead)	Have the potential to be quarantine pests on this pathway.	These species of mealybugs are associated with the pathway.	- *Dysmicoccus brevipes, Dysmicoccus neobrevipes, Exallomochlus hispidus, Ferrisia virgate, Maconellicoccus hirsutus, Nipaecoccis viridis, Paracoccus interceptus, Phenacoccus madeirensis, Planococcus lilacinus, Planococcus litchi, Planococcus minor, Pseudococcus aurantiacus, Pseudococcus comstocki, Pseudococcus cryptus, Pseudococcus jackbeardsleyi* and *Rastrococcus tropicasiaticus* are present in Viet Nam. - Are not recorded in New Zealand. - Are associated with rambutan fruit.	**Yes**

Scientific name	Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
Paracoccus interceptus (Ezzat & McConnell) ***Phenacoccus madeirensis*** (Green) ***Planococcus lilacinus*** (Cockerell) ***Planococcus litchi*** Cox ***Planococcus minor*** (Maskell) ***Pseudococcus aurantiacus*** Williams ***Pseudococcus comstocki*** (Kuwana) ***Pseudococcus cryptus*** Hempel ***Pseudococcus jackbeardsleyi*** Gimpel & Miller ***Rastrococcus tropicasiaticus*** Williams	**And** are likely to establish and spread if they entered NZ.	Mealybugs associated with rambutan from Viet Nam are capable of entering through the pathway, being exposed to hosts, and establishing and spreading within New Zealand.	Entry: - MPI frequently intercepts viable mealybugs on fresh produce at the New Zealand border (MPI 2014), indicating that some mealybugs can survive transport conditions. - Low level infestations of mealybugs may go undetected during harvest and pre-export inspection due to the complex spiny architecture of the fruit. Exposure: - A small proportion of imported rambutan peel is likely to be discarded in an open compost providing a mechanism for imported mealybugs to be exposed to the environment. - Most of these mealybug species are highly polyphagous. Potential hosts grown in home gardens, and/or commercially in New Zealand include brassicas citrus, cucurbits, grapes, pear, *pinus* sp., plum, potato, rose, tomato and white clover. - Mealybugs generally have limited mobility, but can spread by crawling to nearby hosts. Nymphs of some mealybug species may also be wind-dispersed (MPI 2014). - The mobile crawler stage is delicate and susceptible to extremes of temperature, rain and desiccation. Establishment and spread: - The climate, particularly in northern parts of New Zealand such as Northland, Auckland, Bay of Plenty and Hawkes Bay, is assumed to be suitable for the establishment of these mealybugs, but winter temperatures in some parts of New Zealand may be below the lower threshold for crawler development for the tropical species. - The likelihood of establishment of particular mealybugs would depend on whether the species is able to reproduce parthenogenetically, or whether establishment would be limited by the requirement for a mating pair to find each other and reproduce. - A range of potential hosts are found in home gardens and grown commercially. - Spread is likely to be constrained by the fragility and limited mobility of mealybug crawlers.	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		And have the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	Mealybugs associated with rambutan from Viet Nam are capable of causing economic impacts if they established in New Zealand.	- Mealybugs associated with the rambutan pathway could cause production losses to a range of economically important crops including citrus, grapes, pipfruit, and stone fruit, particularly in warmer northern parts of New Zealand. - Economic impacts of mealybug species with tropical distributions are likely to be limited to warmer northern areas of New Zealand. However, some of the species associated with rambutan from Viet Nam are also found in temperate regions (Garcia *et al,* 2016).	
Hemiptera: Tessaratomidae (Stink bugs)	***Tessaratoma papillosa*** (Drury) [Pentatomidae]	Has the potential to be a quarantine pest on this pathway.	*Tessaratoma papillosa* is associated with the pathway.	- *T. papillosa* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan fruit.	**Yes**
		And is likely to establish and spread if it entered NZ.	*T. papillosa* is capable of entering through the pathway, being exposed to hosts, and establishing and spreading within warmer regions of New Zealand.	Entry: - *T. papillosa* eggs are usually laid on the underside of leaves, but have been observed on fruits. Eggs are relatively large (~2.5 mm diameter) and they are usually laid in clusters. However, occasional single eggs may go undetected during harvesting, handling, cleaning and packaging, especially given the complex spiny morphology of the fruit. - Nymphs and adults are mobile and are likely to move off fruit during fruit-handling. Nymphs instinctively fall to the ground when disturbed. - Individual *T. papillosa* nymphs (from ~3 x 6 mm) and adults (~3 x 1.5 cm) remaining on rambutan fruit after harvest are large enough to be detected during cleaning, packaging and pre-export inspection of the fruit. Exposure: - A small proportion of imported infested rambutan fruit or peel is likely to be discarded in an open compost. - *T. papillosa* discarded into the environment would be likely to encounter suitable hosts, as known host plants such as citrus, rose, plum, peach and eucalyptus are commonly grown in home gardens. Establishment and spread: - Establishment of *T papillosa* is likely to be limited by the requirement for a mating pair to find each other to reproduce, especially given that only occasional small numbers of individual eggs of *T. papillosa* are likely to enter on the rambutan pathway. - *T. papillosa* has a tropical geographical distribution and the colder New Zealand climate is likely to limit population growth.	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		And has the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	*T. papillosa* is capable of causing economic impacts if it established in New Zealand.	- If *T. papillosa* became established, it could cause some damage to citrus, pear and stone fruit crops in warmer areas of the country. Economic losses are unlikely to be severe, since these species are not main hosts of *T. papillosa* and the climate in New Zealand is not likely to be optimal.	
Lepidoptera (Moths)	***Conogethes punctiferalis*** (Guenée) [Pyralidae]	Has the potential to be a quarantine pest on this pathway.	*Conogethes punctiferalis* is associated with the pathway.	- *C. punctiferalis* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan fruit.	**Yes**
		And is likely to establish and spread if it entered NZ.	*C. punctiferalis* is capable of entering through the pathway, being exposed to hosts, and establishing and spreading within New Zealand.	Entry: - *C. punctiferalis* larvae (up to 25 mm long) feed inside rambutan fruit and may may go undetected during harvesting, handling, cleaning and packaging, especially given the spiny morphology of the fruit which may mask entry holes, particularly those of early instar larvae. - *C. punctiferalis* (as *Dichocrocis punctiferalis*) has been intercepted at the Swiss border on rambutan from Vietnam. Exposure: - A small proportion of imported infested rambutan is likely to be discarded in an open compost providing a mechanism for *C. punctiferalis* to be exposed to the environment. - Potential hosts of *C. punctiferalis,* such as apples, apricots, cherries, grapes, maize/sweetcorn, peaches, pears and sunflowers are grown in home gardens and/or commercially in New Zealand. Establishment and spread: - Warmer northern regions of New Zealand (i.e. Northland, Auckland, Waikato, Hawkes Bay) probably have a suitable climate for *C. punctiferalis,* and also have suitable hosts - Mature larva can overwinter, meaning that it has ability to hibernate when conditions become unfavourable. - Several infested rambutan fruit would need to be discarded in close proximity to yield a mating pair because eggs of *C. punctiferalis* are laid singly and typically only one larva is found feeding in a single fruit. - Adult *C. punctiferalis* can fly, facilitating spread between hosts.	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		And has the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	*C. punctiferalis* is capable of causing economic impacts if it established in New Zealand.	- Hosts of *C. punctiferalis* with a significant contribution to New Zealand's GDP include apples, peaches, apricots and cherries. - Two thirds of New Zealand's apple and maize/sweetcorn production, as well as some stone-fruit, cherry and grape production occurs in the regions where *C. punctiferalis* is likely to establish. - If established, *C. punctiferalis* would cause economic losses due to direct fruit damage (yield and quantity impacts), as well as the cost of additional pest control. - *C. punctiferalis* establishment has potential for adverse impacts on access to overseas markets if it causes the apple, maize/sweetcorn, stonefruit, cherry and wine (grape) industries to change from their current low pesticide-use regime.	
	Cryptophlebia ombrodelta Lower [Tortricidae]	Has the potential to be a quarantine pest on this pathway.	*Cryptophlebia ombrodelta* is associated with the pathway.	- *C. ombrodelta* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan fruit.	**Yes**

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		And is likely to establish and spread if it entered NZ.	*C. ombrodelta* is capable of entering through the pathway, being exposed to hosts, and establishing and spreading within New Zealand.	Entry: - MPI has intercepted larvae of *C. ombrodelta* infesting Litchi (a Sapindaceae fruit similar to rambutan) from Australia. - *C. ombrodelta* larvae feed inside rambutan fruit and may go undetected during harvest and pre-export inspection, especially given the spiny morphology of the fruit which may mask entry holes, particularly those of early instar larvae. - Late stage larvae and pupae are considered unlikely to be associated with packaged fruit because of the damage caused by larval development and because pupation occurs outside the fruit. - *C. ombrodelta* can survive transportation conditions. Exposure: - A small proportion of imported infested rambutan is likely to be discarded in an open compost providing a mechanism for *C. ombrodelta* to be exposed to the environment. - Potential hosts of *C. ombrodelta,* such as beans, macadamia, avocado and orange are grown in home gardens and/or commercially in New Zealand. Establishment and spread: - Northland may have a suitable climate for *C. ombrodelta,* and also has suitable hosts. - It is assumed that mature larva can overwinter and emerge and multiply when conditions become favourable. - Eggs of *C. ombrodelta* are laid singly and typically only one larva is found feeding in a single fruit. Several infested rambutan fruit would need to be discarded in close proximity to yield a mating pair. - Adult *C. ombrodelta* can fly, facilitating spread between hosts.	
		And has the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	*C. ombrodelta* is capable of causing economic impacts if it established in New Zealand.	- If *C. ombrodelta* became established, it could cause losses to commercial avocado and citrus production in Northland, and in neighbouring districts due to seasonal migration (e.g. Bay of Plenty). - About one third of New Zealand's avocado crop, as well as citrus are grown commercially in Northland. - If established, *C. ombrodelta* would cause economic losses due to direct fruit damage (yield and quantity impacts), and could potentially damage access to overseas markets. - Existing pest management in orchards should minimise damage to only a small portion of each crop. `	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
Thysanoptera (thrips)	***Scirtothrips dorsalis*** Hood [Thripidae]	Has the potential to be a quarantine pest on this pathway.	*Scirtothrips dorsalis* is associated with the pathway.	- *S. dorsalis* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan fruit. *S. dorsalis* is considered a particular pest during flowering, but it can sometimes destroy fruits	**Yes**
		And is likely to establish and spread if it entered NZ.	*Scirtothrips dorsalis* is capable of entering through the pathway, being exposed to hosts, and establishing and spreading within New Zealand.	Entry: - Live *S dorsalis* has been intercepted on other commercial plant material pathways, indicating that *S. dorsalis* can survive transportation conditions. - All developmental stages of *S. dorsalis* are very small (0.7-1.2 mm) and infestations may go undetected during harvest and pre-export inspection, especially given the complex spiny architecture of the fruit. .Exposure: - Only a small proportion of the rambutan peel (*S. dorsalis* is associated with the peel) will be discarded in an environment that would enable the *S. dorsalis* to find a host plant. - Adult *S. dorsalis* are mobile and can actively fly short distances; immature stages are wingless but have some mobility. - Mature larvae and pupae could pass through to adult emergence. - *S. dorsalis* is polyphagous. Suitable hosts that are commonly grown commercially and domestically in New Zealand include asparagus, onion, kiwifruit, pumpkin, cucumber, bean, tomato, capsicum, citrus, pear, strawberry, kumara, cherry, eggplant and grape. Establishment and spread: - The climate in the north of the North Island (down to Tauranga) is assumed to be suitable for the establishment of *S. dorsalis,* but winter temperatures limit the likelihood of permanent outdoor populations. - In other countries with temperate climates *S. dorsalis* has established in protected environments such as glasshouses. - A range of hosts are found in home gardens and grown commercially, so it is likely that *S. dorsalis* would be able to spread to suitable hosts.	
		And has the potential to cause economic consequences which are sufficient to justify risk management measures on this pathway.	*Scirtothrips dorsalis* is capable of causing economic impacts if it established in New Zealand.	- *S. dorsalis* is highly polyphagous, so a number of economically important plants may be affected (e.g. strawberries, grapes, citrus, tomato, capsicum, beans, ornamentals, cut-flowers, eggplant, kiwifruit, cucumber, melon and asparagus). - Consequences to individual growers may be significant (costly disruption to integrated pest management), but the impacts are likely to be limited to the north of the North Island. - Rapid population growth of *S. dorsalis* in the outdoors is unlikely in New Zealand due to the climatic conditions.	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
Hemiptera: Diaspididae (Armoured-scale insects)	***Aulacaspis tubercularis*** Newstead [Diaspididae]	Has the potential to be a quarantine pest on this pathway.	*Aulacaspis tubercularis* may be associated with the pathway.	- *A. tubercularis* is present in Viet Nam. - Is not recorded in New Zealand. - No records of association with rambutan from any country could be found in publicly available scientific literature, however *A. tubercularis* was intercepted associated with rambutan (unspecified plant part) in passenger baggage at the US border.	**No**
		However, the likelihood of introduction is not sufficient to justify risk management measures on this pathway.	*Aulacaspis tubercularis* has a limited capability of entering through the pathway, and being exposed to hosts.	Entry: - *A. tubercularis* is not a major pest of rambutan, so it is unlikely that large numbers will be associated with the fruit. - All developmental stages of *A. tubercularis* are very small (<2 mm) and individual eggs, crawlers or adults may go undetected during harvest and pre-export inspection, especially given the complex spiny architecture of the fruit. - *A. tubercularis* usually occurs as aggregations of mixed lifestages (particularly adult females and eggs). Such groups are likely to be detected, and infested fruit removed during harvesting, cleaning and packing. Exposure: - Only a small proportion of imported rambutan fruit or peel is likely to be discarded in an open compost or into the environment close to suitable hosts. - Crawlers of diaspidid species are fragile and mortality of this life-stage is often extremely high. - Although *A. tubercularis* crawlers are mobile, they have limited ability to disperse.	
		It is unlikely that *A. tubercularis* could enter and establish in New Zealand from the rambutan import pathway.			
	Unaspis citri Comstock [Diaspididae]	Has the potential to be a quarantine pest on this pathway.	*U.citri* may be associated with the pathway.	- *U.citri* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan trunks, limbs and branches. Occasional infestations of fruit and leaves have been recorded in citrus.	**No**

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		However, the likelihood of introduction is not sufficient to justify risk management measures on this pathway.	*U.citri* has a limited capability of being exposed to hosts and establishing in NZ through the pathway.	Entry: - *U. citri* is assumed to occur in rambutan orchards in Vietnam, since it does occur in rambutan orchards in Costa Rica. - Infestation rate and frequency of entry of any life-stage of *U. citri* is expected to be very low on rambutan fruit. In citrus, *U. citri* may be seen on fruit only if the population is large enough; it feeds primarily on the trunk and tree limbs. - All developmental stages *of U. citri* are very small (<2.5 mm) and individual eggs, crawlers or adults may go undetected during harvest and pre-export inspection, especially given the complex spiny architecture of the fruit. - *U. citri* usually occurs as aggregations of mixed lifestages (particularly adult females and eggs). Such groups are likely to be detected, and infested fruit removed during harvesting, cleaning and packing. Exposure: - The proportion of imported rambutan fruit that is both infested with *U. citri* and disposed of in a manner that enables exposure is likely to be very low. Only a small proportion of imported rambutan fruit or peel is likely to be discarded in an open compost or into the environment close to suitable hosts. - Crawlers of diaspidid species are fragile and mortality of this life-stage is often extremely high. - Although *U. citri* crawlers are mobile, they have limited ability to disperse.	
		Small numbers of *U. citri* may be able to enter New Zealand, but it is unlikely that *U citri* could establish in New Zealand from the rambutan import pathway.			
Hemiptera: Tessaratomidae (Stink bugs)	***Tessaratoma javanica*** (Thunberg) [Pentatomidae]	Has the potential to be a quarantine pest on this pathway.	*Tessaratoma javanica* is associated with the pathway.	- *T. javanica* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan fruit.	**No**

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		However, the likelihood of introduction is not sufficient to justify risk management measures on this pathway.	*T. javanica* is not capable of establishing via the pathway.	Entry: - *T. javanica* eggs are usually laid on the underside of leaves, but have been observed on fruits. Eggs are relatively large (~2.5 mm diameter) and they are usually laid in clusters. However, occasional single eggs may go undetected during harvest and pre-export inspection, especially given the complex spiny morphology of the fruit. - Nymphs and adults are mobile and are likely to move off fruit during fruit-handling. Nymphs instinctively fall to the ground when disturbed. - Individual *T. javanica* nymphs (from ~3 x 6 mm) and adults (~3 x 1.5 cm) remaining on rambutan fruit after harvest are large enough to be detected during during harvesting, handling, cleaning and packaging of the fruit. Exposure: - A small proportion of imported infested rambutan fruit or peel is likely to be discarded in an open compost. - Summer temperatures in New Zealand are sufficiently warm to allow first instar nymphs to hatch from *T. javanica* eggs. - *T. javanica* discarded into the environment would be highly unlikely to encounter a suitable host. Only two of its recorded hosts (*Litchi chinensis; Ziziphus jujuba*) are known from New Zealand, and these tropical plants are rarely cultivated in New Zealand.	
		***T. javanica* may be able to enter New Zealand, but is unlikely to establish from the fresh rambutan import pathway.**			
Hymenoptera: Formicidae (ants)	***Oecophylla smaragdina*** Fabricius [Formicidae]	Has the potential to be a quarantine pest on this pathway.	*Oecophylla smaragdina* is associated with the pathway.	- *O. smaragdina* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan fruit.	**No**

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
		However, the likelihood of introduction is not sufficient to justify risk management measures on this pathway.	*Oecophylla smaragdina* is not capable of establishing via the pathway.	Entry: - *O. smaragdina* (weaver ants) are 0.5-1.0 cm in length, so most will be detected and removed during harvesting, handling, cleaning and packaging. - MPI has intercepted ants of a similar size on imported fruit (including the related fruit litchi). - The complex spiny morphology of rambutan increases the likelihood that ants will avoid detection. Exposure: - *O. smaragdina* are highly mobile and likely to move off rambutan fruit in search of food. - *O. smaragdina* is a polyphagous predator so suitable food is likely to be available near outdoor markets and rambutan disposal sites. Establishment and spread: - Establishment of *O. smaragdina* in New Zealand would require entry of either a nest of *O. smaragdina* ants, or entry of a mated queen ant, followed by that queen successfully locating a suitable nesting site and starting a new colony. - *O. smaragdina* is an ant of tropical origins and distribution (current geographic distribution is India, South-east Asia, and northern Australia). Colder temperatures in New Zealand are likely to restrict brood development and foraging activity	
		***O. smaragdina* may be able to enter New Zealand, but is unlikely to establish from the fresh rambutan import pathway.**			
	Technomyrmex albipes Smith [Formicidae]	Has the potential to be a quarantine pest on this pathway.	*Technomyrmex albipes* is associated with the pathway.	- *T. albipes* is present in Viet Nam. - Is not recorded in New Zealand - Is associated with rambutan fruit.	**No**
		However, the likelihood of introduction is not sufficient to justify risk management measures on this pathway.	*Technomyrmex albipes* is not capable of establishing via the pathway.	Entry: - The prevalence of *T. albipes* in rambutan orchards in Vietnam is assumed to be very low, given that no records were found in the usual information sources *T. albipes* has previously been intercepted on commercial rambutan from another country (USA - Hawaii) (CDFA 2008), where *T. albipes* does apparently occur in tropical fruit orchards. - These ants may avoid detection during harvesting, handling, cleaning and packaging because they are small (2-4 mm in length) and mobile and the complex spiny morphology of rambutan increases the likelihood that ants will avoid detection. Exposure: - *T. albipes* are highly mobile and likely to move off rambutan fruit in search of food.	

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
				- *T. albipes* primarily feeds on plant nectars and honeydew (ISSG 2016). Assuming foraging and feeding behaviour is similar to other *Technomyrmex* species, it is likely that *T. albipes* also feed on dead insects and other protein. Suitable food is likely to be available near outdoor markets and rambutan disposal sites. - Establishment and spread: - Establishment of *T. albipes* in New Zealand would require entry of either a nest of *T. albipes* ants, or entry of a mated queen ant, followed by that queen successfully locating a suitable nesting site and starting a new colony. - *T. albipes* is an ant of tropical origins and distribution (current geographic distribution is India, South-east Asia, and northern Australia). Colder temperatures in New Zealand are likely to restrict brood development and foraging activity.	
		***T. albipes* may be able to enter New Zealand, but is unlikely to establish from the fresh rambutan import pathway.**			
Lepidoptera (Moths)	***Conopomorpha cramerella*** Snellen [Gracillariidae]	Has the potential to be a quarantine pest on this pathway.	*C. cramerella* is associated with the pathway.	- *C. cramerella* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with rambutan fruit.	**No**
		However, the likelihood of introduction is not sufficient to justify risk management measures on this pathway.	*C. cramerella* is not capable of establishing via the pathway.	Entry: - *C. cramerella* is assumed to be a prevalent pest in rambutan orchards in Vietnam. Small numbers of *C. cramerella* are likely to enter New Zealand in consignments of rambutan from Vietnam on a regular basis. - *C. cramerella* larvae feed inside rambutan fruit and may go undetected during harvest and pre-export inspection, especially given the spiny morphology of the fruit which may mask entry holes, particularly those of early instar larvae. Exposure: - A small proportion of imported infested rambutan is likely to be discarded in an open compost providing a mechanism for *C. cramerella* to be exposed to the environment. - *C. cramerella* discarded into the environment would be extremely unlikely to encounter a suitable host, since only three of its known hosts are permitted in New Zealand (*Nephelium lappaceum*, *Theobroma cacao* and *Lansium domesticum*), and these tropical plants are rarely cultivated in New Zealand. .	
		***C. cramerella* may be able to enter New Zealand, but is unlikely to establish from the fresh rambutan import pathway.**			

Scientific name		Conclusion	Reason	Evidence to support (MPI 2016, IRA: Fresh rambutan fruit from Viet Nam)	Is a measure justified?
Thysanoptera (thrips)	***Thrips hawaiiensis*** Morgan [Thripidae]	Does not fulfil the criteria of a quarantine pest on this pathway	*Thrips hawaiiensis* is not associated with the pathway.	- *T. hawaiiensis* is present in Viet Nam. - Is not recorded in New Zealand. - Is associated with flowers of rambutan, not with fruit. Rambutan flowers do not occur at the same as harvest-ready fruit, so *T. hawaiiensis* will not be associated with harvest-ready fruit in a hitch-hiker capacity.	**No**
		***T. hawaiiensis* are unlikely to enter and establish in New Zealand from the rambutan import pathway.**			