

**FINAL IMPORT RISK ANALYSIS  
ON THE  
IMPORTATION OF  
FRESH DURIAN FRUIT  
(*Durio zibethinus* Murray)  
FROM THE  
KINGDOM OF THAILAND**

**November 1999**



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The following is my determination in relation to AQIS policy on the importation of fresh fruit of durian (*Durio zibethinus* Murray) from Thailand.

Importation of fresh durian fruit will be permitted subject to the application of phytosanitary measures as specified in section 6 of this final import risk analysis (IRA) paper. These requirements maintain Australia's appropriate level of protection and accord with Australia's international rights and obligations under the WTO Agreement on Application of Sanitary and Phytosanitary Measures. The import risk analysis has been conducted in accordance with the *AQIS Import Risk Analysis Process Handbook*.

This policy is to be applied in accordance with the *Quarantine Act 1908* and *Quarantine Proclamation 1998* as amended ('the Proclamation'). The phytosanitary measures specified in section 6 of this final IRA paper are designed to limit the quarantine risk to a level which is acceptably low consistent with section 70 of the Proclamation.

I am satisfied that my determination to adopt the recommendations of the IRA is not an environmentally significant action, nor is it desirable for other reasons to designate a proponent to achieve the object of the *Environment Protection (Impact of Proposals) Act 1974* and the Administrative Procedures made under that Act.

Digby Gascoine  
Acting Executive Director  
November 1999

## **Acknowledgments:**

This final IRA has been prepared by the Plant Quarantine Policy Branch, Policy and International Division, with assistance from the Horticulture Program, Animal and Plant Programs Branch, Quarantine Export and Operations Division of the Australian Quarantine and Inspection Service.

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# 1. AUSTRALIAN QUARANTINE AND INSPECTION SERVICE'S POSITION

Subject to the application of appropriate phytosanitary requirements (given in full in Section 6 of this document) the Australian Quarantine and Inspection Service (AQIS) approves the importation of fresh durian fruit (*Durio zibethinus* Murray) from the Kingdom of Thailand (herein referred to as Thailand).

## 2. EXECUTIVE SUMMARY

Australia currently allows the import of frozen durian fruit from Thailand. Durian seeds, budwood and bare-rooted seedlings for planting purposes are also allowed under specific phytosanitary conditions from all durian-growing areas. In July 1994, AQIS received a formal application from the Government of Thailand to consider the importation of fresh durian fruit from Thailand. In January 1998, AQIS informed stakeholders that it would commence an import risk analysis (IRA) of fresh durian fruit from Thailand as outlined in *The AQIS Import Risk Analysis Process Handbook* (AQIS, 1998b). The IRA was conducted according to relevant International Standards for Phytosanitary Measures (ISPM Publication No. 2) and other international standards being developed by the Secretariat of the International Plant Protection Convention of the Food and Agriculture Organization (FAO) of the United Nations.

### 2.1 Risk Identification

A pest risk analysis (PRA) was completed which considered factors such as the biology, host range, distribution, entry potential, establishment potential, spread potential and economic damage potential of the pests and diseases that may be associated with durian fruit from Thailand. The PRA (Lim, 1997) and draft IRA (AQIS 1998a) papers identified a total of 60 arthropod species, one snail, one nematode and 14 fungi associated with durian in Thailand. There were no diseases identified as being of quarantine concern to Australia. However, eight species of arthropod, currently not present in Australia but capable of establishment if introduced, were identified as quarantine pests<sup>1</sup> with the risk of being associated with fresh durian fruit imported from Thailand. The analysis also identified management procedures to reduce the risk to a very low level.

Following consideration of management options for the pests of quarantine concern and stakeholder comments on the draft IRA, AQIS has concluded that the risk posed by these pests would be managed with appropriate phytosanitary measures. The measures proposed to address the risk posed by these pests are set out below.

### 2.2 Risk Management

Table 1 provides a summary of the risk management measures to be implemented for quarantine pests that may be associated with imported durians from Thailand.

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<sup>1</sup> Quarantine pest – a pest of potential economic importance to the area endangered thereby and not yet present, or present but not widely distributed and being officially controlled. (FAO 1997, ISPM Pub. No. 5).

Table 1. Summary of phytosanitary measures to be implemented to manage for the eight quarantine pests associated with durian fruit

Insect pest	Common name	Quarantine risk level	Detection/monitoring survey	IPM	Fruit bagging	Air brushing of fruits	Insecticide dip	Standard inspection	Fruit inspection by cutting
<i>Coccus</i> sp.	scale insect	low						√	
<i>Icerya</i> sp	stem scale insect	low						√	
<i>Hemicentrus attenuatus</i>	horned tree hopper	low						√	
<i>Mudaria luteileprosa</i> Holloway	durian seed borer	high	√	√	√				√
<i>Planococcus lilacinus</i>	coffee mealybug	high				√	√		
<i>Pseudococcus</i> sp.	mealybug	low						√	
<i>Remelana jangala ravata</i>	fruit eating moth	low						√	
<i>Saissetia</i> sp.	scale insect	high				√	√		

Following circulation of the draft IRA and further information received (24 March 1999) from the Thailand Department of Agriculture, the quarantine risk status of certain pests has been revised. Those pests identified as quarantine pests in the draft IRA remain as such. However, the risk level assessed for *Coccus* sp. - soft scale, *Icerya* sp. - stem scale, *Pseudococcus* sp. – mealybug and *Remelana jangala ravata* Moore - fruit eating moth, has been changed from high to low based on the assurance provided by Thailand Plant Quarantine (TPQ) that they occur infrequently on durian in Thailand. Of the other quarantine pests identified in the IRA *Hemicentrus attenuatus* Funkh. - horned treehopper remains a low risk quarantine pest. *Mudaria luteileprosa* Holloway - durian seed borer (DSB), *Planococcus lilacinus* Cockerell, the coffee mealybug, and *Saissetia* sp. - scale insect, remain in the high-risk level.

Imported durian fruit must be free from low risk pests as verified by a pre-export inspection by Thai quarantine authorities. Mealybugs and scale insects can be managed by airbrushing of fruits and insecticide disinfestation treatment of fruit.

Durian seed borer is by far the most destructive pest of durian in Thailand. AQIS believes this pest can be managed by a systems approach incorporating pest monitoring, surveillance, and an integrated pest management (IPM) program. The IPM program is to include fruit bagging, field sanitation, biological control, cultural and other field control measures. The effectiveness of such measures in ensuring fruit is free from DSB will be verified during pre-export inspection by fruit cutting.



TPQ will be required to supervise airbrushing and insecticide treatment, fruit-cutting inspection for DSB and inspection of consignments prior to export. In the event of quarantine pests being detected in any lot, all fruit from the packing house/export centre comprising that lot will be rejected. There will be no provisions for re-sorting of fruit. The packing houses/export centres and phytosanitary post-harvest handling procedures will be audited by AQIS before exports will be permitted.

In addition, an AQIS officer or an AQIS appointed entomologist will make visits to the export orchards before and/or during fruit harvest in the first year of trade. The purpose of the visits will be to inspect orchards, to audit DSB monitoring/surveillance results and to audit other phytosanitary requirements for fruit prior to export.

AQIS will carry out on-arrival inspection and verification of consignments of fresh durian from Thailand.

The option of area freedom certification for DSB could not be considered by AQIS at this juncture. Such a proposal would require careful evaluation given that:

- a) pest free areas cannot be delineated because of the paucity of information on the distribution and seasonal fluctuations of DSB in the various durian-growing regions;
- b) most information on the pest distribution has been based on biological investigations carried out in the eastern provinces of Thailand with negligible monitoring information of DSB in the other regions;
- c) there is no internal quarantine legislation in Thailand concerning the movement of planting material and fruit between the growing areas and therefore no security from DSB; and
- d) durian exporters in the eastern provinces do source fruit from the other regions.

AQIS does not preclude consideration of area freedom as a future management option for DSB. However, TPQ in collaboration with Thailand Department of Agricultural Extension (DOAE) would need to provide data from monitoring and delineating surveys, buffer zones, systems to establish pest freedom, and control measures to verify that pest freedom has been attained and maintained before this option could be considered further.

### **2.3 Environmental Impact Assessment**

In the draft IRA report (AQIS, 1998a), AQIS has considered the potential environmental impact of imports of fresh durian fruit from Thailand. AQIS is satisfied that importation of fresh durian under the specified conditions will present negligible risk to the environment, and accordingly that the obligations arising from the Administrative Procedures made under the Environment Protection (Impact of Proposals) Act 1974 have been met.

### **2.4 Implementation**

AQIS will develop procedures with TPQ based on these conditions for the importation of fresh durian fruits. AQIS Animal and Plant Programs Branch (APPB) together with the Plant Quarantine Policy Branch (PQP) will develop a checklist, and document inspection procedures for field operations, packing house/export centres, treatment procedures for mealy bugs and scales, fruit cutting methodology for DSB and standard phytosanitary inspection. They will also ensure implementation of import conditions, auditing of the program through audit of field controls for pests of quarantine concern, trapping data, detection data

and AQIS officer or AQIS appointed entomologist field visit reports. The phytosanitary requirements for the importation of fresh durian fruit from Thailand will be reviewed at the end of the first year of trade.

### **3. BACKGROUND**

Thailand Government representatives first expressed interest in exporting a number of fresh fruit products, including durian (*Durio zibethinus* Murray), to Australia at the 11th meeting of the Australia-Thailand Joint Trade Committee in 1991. At that meeting, the Australian delegation requested details of pests and diseases of the commodities that Thailand wished to export. In April 1991, Thailand provided pest and disease lists including 12 diseases and three arthropod pests of durian. However the lists were incomplete omitting all arthropod pests recorded on durian in "A Host List of the Insects of Thailand" (Department of Agriculture, Royal Thai Government). In June 1991, AQIS requested more comprehensive information on the incidence, importance, distribution and control of pests and diseases in Thailand for completion of a pest risk analysis (PRA). No further information was provided from Thailand.

In July 1994, AQIS again received a request to consider the importation of fresh durian fruit from Thailand. The Thai authorities provided a list of five arthropod pests and seven pathogens of durian "known to occur in Thailand". A search of the world literature identified additional pests and diseases recorded on durian in Thailand, as well as others in neighbouring countries. AQIS considered it possible that some of the organisms not yet recorded in Thailand were present there. In March 1995, the Thai authorities were asked for further information in relation to three specific pests recorded as present in Thailand, and on five pests on durian in neighbouring countries. Additional discussions on durian importation were held with Thai representatives at the 3rd Australia Thailand Joint Technical Working Group on Quarantine and Food Inspection in September 1995. Thailand provided information on durian diseases and fruit bagging trials. At a meeting with a Thai Department of Agriculture official in May 1996, AQIS requested information on chemical control of mites, timing of fruit bagging, and details of damage, prevalence and biology of pests noted by AQIS. At the 17th Australia-Thailand Joint Trade Committee Meeting in October 1996 Thailand noted that trials for producing durian under plastic covers were continuing and information would be provided to AQIS shortly.

In early 1997, objections to importation of fresh durian were raised by the Northern Territory Horticultural Association and the Rambutan and Tropical Exotic Local Growers Association of Queensland. Both organisations registered concern over four insect pests that are not present in Australia. In August 1997 Thailand submitted a new list of pests and diseases recorded in association with durian in Thailand. This listing included 49 arthropods and 16 diseases. On 16 January 1998, AQIS informed key stakeholders that it had commenced an IRA on the importation of fresh durian fruit from Thailand. In May 1998, AQIS arranged for a technical specialist to visit Thailand to investigate the status of quarantine pests and diseases and their management as well as quarantine measures that might address the quarantine risks associated with the pests of fresh durian to Australia. The report is documented in the PRA paper (Lim, 1997). In November 1998, the routine IRA process was confirmed after consultation with stakeholders. The draft IRA was released for stakeholder comment on 19 January 1999 and B. Stynes and TK Lim presented these findings to durian stakeholders in north Queensland in late January 1999.

### **4. STAKEHOLDER CONSULTATION**

AQIS sent the draft durian IRA to 300 stakeholders and received 34 written comments (see Section 10-List of respondents). Nine responses were received from industry groups representing growers, fourteen responses from individual growers/farms, five from Australian State Departments of Primary Industry/Agriculture, two from research organisations, two from State and Commonwealth parliamentarians, and one from each of the Thailand Ministry of Agriculture and Cooperatives and the Thailand Department of Agriculture (Thailand Plant Quarantine).

In summary:

- Some respondents either supported or did not oppose the importation. However, several respondents suggested modifications to the import conditions proposed in the draft IRA.
- Industry groups and grower respondents opposed the importation on the grounds that the risk of exotic pests and diseases entering Australia and causing economic damage would be too great.
- No pests additional to those listed in the draft IRA were identified by the respondents; however the quarantine risk levels of some of the pests were changed in light of new information supplied by Thailand Department of Agriculture.
- The matters raised by the respondents are detailed in Section 9.

## **5. SUMMARY OF VARIATIONS TO PHYTOSANITARY IMPORT REQUIREMENTS DETAILED IN THE DRAFT IRA**

AQIS has amended several conditions proposed in the draft IRA on the basis of further consideration of issues and in the light of comments received from stakeholders. The principal changes are:

- The reduction of the quarantine risk level of four pests from high to low as outlined in Section 2.2 based on the assurance provided by TPQ that they occur infrequently on durian in Thailand.
- The use of a systems approach to mitigate risks associated with DSB. The system is to include monitoring/surveillance, IPM and fruit cutting inspection procedures to be supervised by DOAE in collaboration with TPQ. The IPM component has been made a mandatory requirement.
- An additional requirement is that an AQIS officer or an AQIS appointed entomologist visits the export orchards before and/or during fruit harvest in the first year of trade. AQIS will determine when such visits are required. The purpose of the visits is to audit orchards for compliance with import requirements, DSB survey and monitoring results and other phytosanitary requirements for fruit prior to export.
- Airbrushing followed by an insecticide treatment are required for mitigating risks posed by the coffee mealybug and *Saissetia* scale. TPQ will supervise the airbrushing and insecticide treatment and pre-export inspection for other quarantine pests. Packing houses/export centres and phytosanitary post-harvest handling procedures must be audited and found satisfactory by AQIS, before exports will be permitted.

- Registration of orchards and packing houses/export centres must be completed by TPQ and audited or inspected by AQIS staff before exports will be permitted.
- All consignments must be shipped directly from one port or city in the country of origin to a destination port or city in Australia. No land-bridging of consignments is allowed.
- Exports will be allowed during the main fruiting season in Thailand ie. from April to September. This will further ensure that an appropriate level of protection is achieved as imports will then coincide with conditions which would be unfavourable for the survival and establishment of DSB were it to enter.

## 6. PHYTOSANITARY IMPORT REQUIREMENTS

The phytosanitary import requirements for fresh durian to Australia from Thailand are as follows:

### **Item 1.** Registration of grower orchards and submission of information

Durian fruit for export to Australia must be sourced from DOAE registered export orchards. Registered growers must keep records of control measures for auditing purposes and be given registration numbers. These registration numbers must be labelled on boxes of fruit destined for export to enable trace-back in the case of non-compliance.

### **Item 2.** Integrated Pest Management (IPM) and monitoring programs

Growers proposing to export fresh durian fruit to Australia must be registered with DOAE. They must have an orchard control program incorporating a pest monitoring system and conduct appropriate surveys under an IPM program developed by DOAE. This IPM program is mandatory for DSB. The details for such an agreed program are detailed below.

The IPM program must include:

- (a) monitoring of DSB population and application of an economic threshold level (ETL) to trigger the implementation of control measures particularly chemical application. Monitoring and inspection for DSB should be undertaken using black-blue light traps at frequencies of 2-3 times a week from February to June. The ETL will be set at one adult DSB trapped. Trapped insects must be identified and recorded before being destroyed. Details of pest infestation levels, number of trapped insects and their identities should be supplied to AQIS staff or AQIS appointed entomologist for auditing purposes.
- (b) some or all of fruit bagging, field sanitation, biological, chemical and cultural control. Bagging of fruits with translucent bags to reduce infestation by DSB must start at five weeks after fruit set. Field sanitation must be practised with all fallen fruits to be cut open to kill the insect inside infested fruits. Chemical control using appropriate and effective IPM compatible insecticides should be applied and should adhere to recommended withholding periods. Cultural control methods such as fruit thinning, adequate fertilisation, weed control and effective irrigation practices would also assist in improving the environment for beneficial natural enemies.

Growers must keep records of spray programs and IPM procedures for frequent auditing by DOAE. TPQ

must arrange for an AQIS officer or an AQIS appointed entomologist to make visits to registered IPM “export” orchards during the critical times to monitor and audit these activities.

### **Item 3.** Pre-sorting and cleaning at the growers’ orchards

Durian fruit for export to Australia must be cleaned of adhering debris, sorted and tagged with the orchard registration number according to instructions from DOAE officers. Only clean fruits should be sent to registered packing houses/export centres.

### **Item 4.** Registration and auditing of packing house/export centre

Packing houses/export centres intending to export durian fruit to Australia must be registered with DOAE and audited by AQIS to ensure compliance with AQIS requirements. The packing houses/export centres must incorporate in their packing line, facilities and procedures for further selection, culling, treatment and inspection of fruit for DSB and the other pests. Managers of these facilities must provide details of fruit processing/treatment procedures and allow inspection by an AQIS officer before exports will be permitted.

DOAE officials must ensure the following:

- registered export centres facilities are maintained in a condition that will enable compliance with fruit treatment requirements
- all areas are hygienically maintained (cleaned daily of infested, damaged and blemished fruit)
- premises are maintained to exclude the entry of pests from outside and contamination between treated and untreated lots of fruit
- all equipment is regularly calibrated and records retained for verification
- the movement of lots of fruit from the time of arrival at the registered premise through to the time of export is recorded
- the security of fruit on the premises is maintained at all times.

Non-compliance with any of the above requirements will result in suspension of the facility by DOAE until corrective action has been completed and AQIS agreement has been obtained for reinstatement.

### **Item 5.** Airbrushing, and insecticide treatment

On arrival at the packing house/export centre, the fruits must be airbrushed under high pressure to remove mealybugs and scale insects and then washed. The washed fruit must then be treated by dipping in suspension containing an insecticidal soap or a light paraffinic oil with high solvency property at rates of 2-3% (v/v) for 30 seconds. The fruits may have further treatment with a registered fungicide to control post harvest rots.

### **Item 6.** Pre-export inspection at packing house/export centre

AQIS requires 95% confidence that not more than 0.5% of units (for durian a unit is one fruit) in the lot are infested with visually detectable quarantine pests. To achieve this AQIS requires that a 450 unit random sample from lots of less than 1000 fruits or a 600 unit random sample from lots of more than 1000 fruits be inspected by fruit cutting in order to detect DSB. Culled fruits can be included in the random sample.

This sampling regime will also be applicable for standard inspection for other quarantine pests but the random sample must not include culled fruits. Standard inspection should be undertaken after fruit cutting for DSB. Inspection for quarantine pests will be done by TPQ.

All fruits packed for export to Australia at a particular packing house/export centre on a particular day will constitute an inspection lot unless otherwise agreed by AQIS and TPQ. It is desirable to have fruits from one registered orchard as a 'lot' for trace-back purposes. However, since the quantities of fruit to be exported are unknown, fruits from several registered orchards may be combined to form a 'lot' large enough to provide the agreed sample size provided registered grower numbers are retained for trace back purposes. If an inspection 'lot' is rejected, remaining fruits from that registered grower must be withdrawn from further inspection for that consignment. A consignment is the quantity of fresh durian fruit covered by one phytosanitary certificate that arrives at one port in one shipment. All consignments must be shipped directly from one port or city in the country of origin to a destination port or city in Australia. No land-bridging of consignments is allowed.

A registered orchard from which fruit is rejected will be permitted to resubmit further 'lots' for the current export season, but if a second 'lot' is rejected the registered grower will be suspended for the remainder of the season.

#### **Item 7. Packing and labelling**

Inspected and treated fruits are to be packed immediately in cardboard cartons. New cartons must be used for packing. Packing material must be synthetic or processed if of plant origin. No unprocessed packing material of plant origin such as straw is permitted.

All cartons containing treated fruit which has been certified free from quarantine pests, must bear a TPQ seal or sticker, and must be labelled with the packing house/export centre and grower registration numbers. The date of packing should appear on the carton, which should be marked "For Australia". For palletised "integral" consignments that have been strapped and secured the information marked on the cartons must be provided in a pallet card.

#### **Item 8. Phytosanitary certification**

All consignments must have a phytosanitary certificate issued by TPQ for DSB and other quarantine pests.

#### **Item 9. Security of fruit**

All certified fruit must not be mixed or come in contact with fruit for the domestic market or other fruit which are not eligible for export to Australia. This could be achieved through segregation of fruit for export to Australia, netting or shrink-wrapping pallets in plastic, or by placing cartons in low temperature cold storage before loading into a shipping container. Alternatively, packed fruit can be directly transferred at the packing house into a shipping container, which must be sealed with a TPQ seal and not opened until the container reaches Australia.

#### **Item 10 Verification of consignment for documentation errors**

AQIS will examine relevant certification, documents and seals at the port of arrival in Australia. Any consignment with incomplete or defective documentation, or with certification which does not conform to

specifications, or where seals of the containers in a consignment are damaged or missing, will be refused entry with the options of re-export or destruction of contents by freezing. The AQIS approved phytosanitary freezing treatment requires maintenance of product at  $-18^{\circ}\text{C}$  for a minimum of seven days. Cost incurred by this freezing treatment will have to be borne by importers in Australia. AQIS will notify TPQ immediately of any action to be taken.

#### **Item 11. On-arrival inspection**

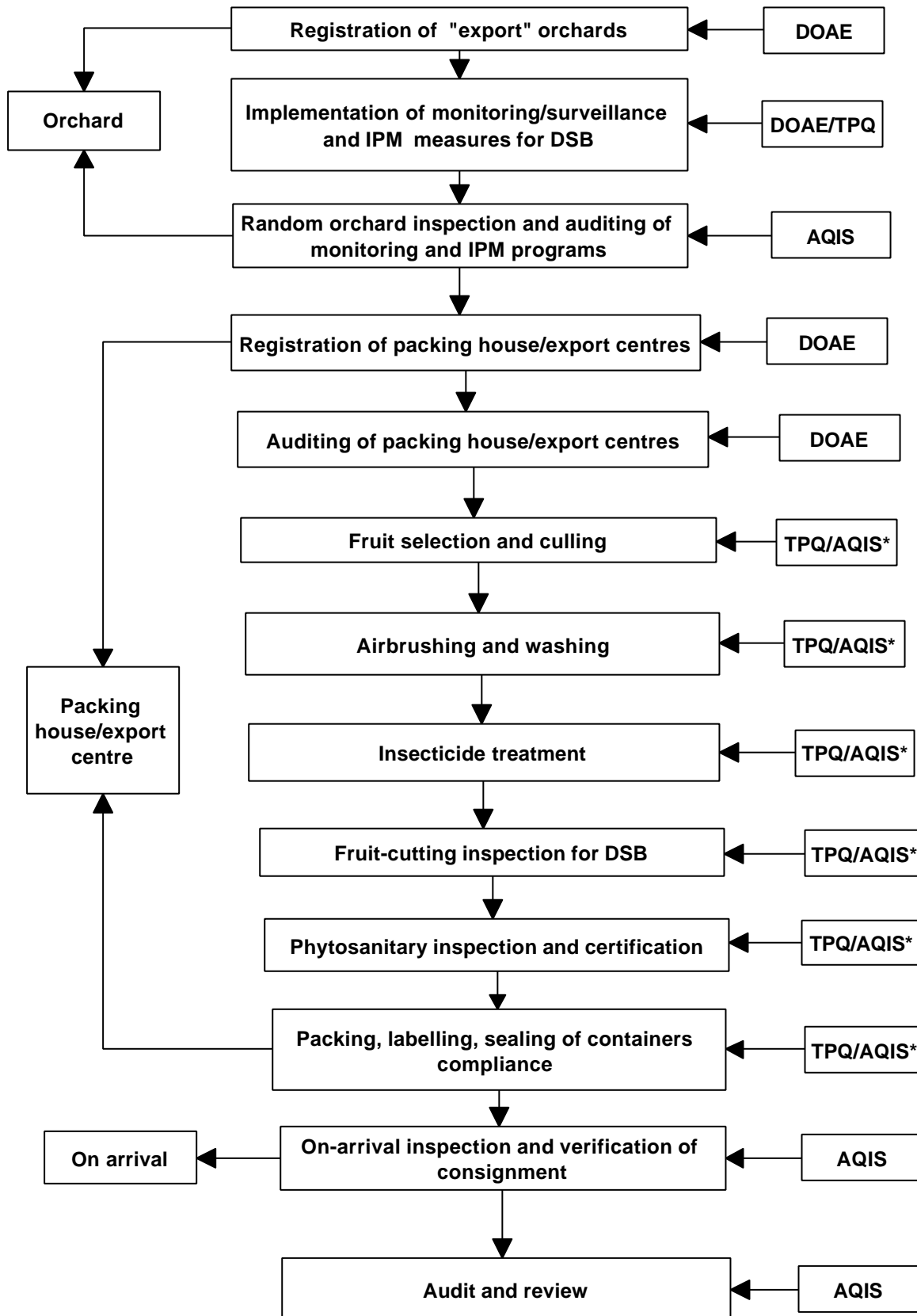
On arrival, each consignment will be inspected by AQIS. Six hundred fruit from each consignment will be randomly sampled for inspection using a 10 X hand lens or a magnifying glass. Fruit showing surface damage or punctures will be cut for internal examination for DSB.

If any live quarantine pest including DSB is found in the sample, containers in a consignment will be re-exported or destroyed by freezing as described in Item 10. The reasons for failure must be established and appropriate remedial action agreed upon between TPQ and AQIS before trade is permitted to recommence. AQIS undertakes to provide details of such finding including identification of the pest.

#### **Item 12. Review of protocol**

The protocol for each of the items outlined above will be reviewed at the end of the first season of export.

Outline of phytosanitary procedures for the importation of fresh durian fruit from Thailand to Australia



\* Supervised or undertaken by / audited by





## 7. PESTS ASSOCIATED WITH DURIAN FROM THAILAND

Table 2 lists the pests identified during the risk analyses (AQIS, 1998; Lim, 1997) or likely to be associated with durian in Thailand. Their distribution, quarantine status, estimated quarantine risk potential and management options are also shown.

Risk potential was determined from the risk analyses. Ratings of low, medium and high were assigned on the basis of assessment of entry potential, establishment potential, spread potential and the potential economic impact of the pests. High risk quarantine pests require specific phytosanitary measures such as field controls, pest free area freedom, and internal and external disinfestation treatment. Medium risk quarantine pests may require special phytosanitary declarations or post-harvest treatment. Low risk quarantine pests undergo standard phytosanitary inspection, packing and labelling compliance and on-arrival inspection.

**Table 2. Pests associated with durian in Thailand: assessment of quarantine status and phytosanitary requirement.**

Species	Common Name	Present in Thailand	Present in Australia	Australian Quarantine Status	Present in Fruit Pathway (estimated risk)	Phytosanitary Requirement
<b>ARTHROPODA</b>						
<i>Allocarsidara malayensis</i> (Crawford) Syn. <i>Tenaphalara malayensis</i> Crawford	durian psyllid	yes	no	quarantine	no	
<i>Adoxophyes privatana</i> Walker	leaf roller	yes	no	quarantine	no	
<i>Amrasca durianae</i> sp. Hongsaprug	durian leaf hopper	yes	no	quarantine	no	
<i>Aphis gossypii</i> Glover	cotton aphid	yes	yes	non-quarantine	no	
<i>Aprosterna pallida</i> Fabricius	leaf eating beetle	yes	no	quarantine	no	
<i>Archips machlopi</i> Meyrick	leaf roller	yes	no	quarantine	no	
<i>Arctornis cygna</i> Moore	leaf eating	yes	no	quarantine	no	
<i>Arthisma scissuralis</i> Moore	leaf eating	yes	yes	non-quarantine	no	
<i>Aspidiotus destructor</i> Signoret	coconut scale	yes	yes	non-quarantine	no	
<i>Autoba versicolor</i> Walker (Syn. <i>Eublema versicolora</i> Walker)		yes	yes	non-quarantine	yes	
<i>Chalcocelis albiguttatus</i> (Snellen)	leaf eating, gelatine grub	yes	yes	non-quarantine	no	
<i>Coccus</i> sp.	scale insect	yes	uncertain	quarantine	yes (low)	standard inspection
<i>Conogethes punctiferalis</i> (Guenee)	durian fruit borer, durian	yes	yes	non-quarantine	yes	

Species	Common Name	Present in Thailand	Present in Australia	Australian Quarantine Status	Present in Fruit Pathway (estimated risk)	Phytosanitary Requirement
	husk borer, yellow peach moth, Queensland bollworm					
<i>Cryptophlebia ombrodelta</i> Lower	litchi fruit moth, macadamia nut borer	yes	yes	non-quarantine	yes	
<i>Dactylispa leonardi</i> Rits.	leaf mining grub	yes	no	quarantine	no	
<i>Daphnusa ocellaris</i> Walker	hawkmoth	yes	no	quarantine	no	
<i>Dasychira inclusa</i> Walker	leaf eating	yes	no	quarantine	no	
<i>Dasychira mendosa</i> (Hubner)	tussock moth	yes	yes	non-quarantine	no	
<i>Dasychira osseata</i> Walker	tussock moth	yes	no	quarantine	no	
<i>Dasychira</i> sp.		yes	no	quarantine	no	
<i>Erizada lichenaria</i> Walker	leaf eating caterpillar	yes	no	quarantine	no	
<i>Eutetranychus africanus</i> (Tucker)	African red mite, citrus brown mite	yes	no	quarantine	no	
<i>Eutetranychus orientalis</i> Klein misidentification	oriental red mite	yes	yes - under official control	quarantine	no	
<i>Helicoverpa armigera</i> Hubner Syn. <i>Heliothis armigera</i> (Hubner)	cotton boll worm	yes	yes	non-quarantine	no	
<i>Hemicentrus attenuatus</i> Funkh. ( <i>Sarritor attenuatus</i> )	treehopper	yes	no	quarantine	yes (low)	standard inspection
<i>Homona coffearia</i> (Nietner)	leaf roller moth	yes	no	quarantine	no	
<i>Homono difficilis</i> Meyrick	leaf roller moth	yes	no	quarantine	no	
<i>Homona eductana</i> Walker	leaf roller moth	yes	no	quarantine	no	
<i>Horaga onyx onyx</i> Moore	flower eating moth	yes	no	quarantine	no	
<i>Hypomeces squamosus</i> (F.)	leaf eating weevil	yes	no	quarantine	no	
<i>Icerya</i> sp.	Stem scale insect	yes	uncertain	quarantine	yes (low)	standard inspection
<i>Lymantria marginata</i> Walker	leaf eating caterpillar	yes	no	quarantine	no	
<i>Mahasena corbeti</i> Tams	coconut case worm	yes	no	quarantine	no	
<i>Megalurothrips</i> sp.	thrips	yes	uncertain	quarantine	no	
<i>Mudaria luteileprosa</i>	durian seed	yes	no	quarantine	yes (high)	monitoring, IPM, pre-export

Holloway	borer					inspection by fruit cutting
<i>Nodostoma</i> sp.		yes	uncertain	quarantine	no	
<i>Oligonychus biharensis</i> Hirst	mite	yes	no	quarantine	no	
<i>Orygia turbata</i> Walker	tussock moth	yes	no	quarantine	no	
<i>Oxyodes scrobiculata</i> (F.)		yes	no	quarantine	no	
<i>Paracrama dulcissima</i> Walker	leaf eating caterpillar	yes	no	quarantine	no	

Species	Common Name	Present in Thailand	Present in Australia	Australian Quarantine Status	Present in Fruit Pathway (estimated risk)	Phytosanitary Requirement
<i>Planococcus lilacinus</i> (Cockerell)	mealybug	yes	no	quarantine	yes (high)	airbrushing, insecticide treatment.
<i>Planococcus minor</i> (Maskell)	mealybug	yes	yes	non-quarantine	yes (low)	
<i>Platytrachelus psittacinus</i> Fst.	weevil	yes	no	quarantine	no	
<i>Pseudococcus</i> sp.	mealybug (description fits <i>Planococcus minor</i> )	yes	uncertain (yes if species is <i>P. minor</i> )	quarantine	yes (low)	standard inspection.
<i>Rapala dieneces dieneces</i> (Hewitson)	flower eating moth	yes	no	quarantine	no	
<i>Remelana jangala ravata</i> (Moore)	fruit eating moth	yes	no	quarantine	yes (low)	standard inspection.
<i>Saissetia</i> sp.	scale insect	yes	no	quarantine	yes (high)	airbrushing, insecticide treatment.
<i>Scirtothrips dorsalis</i> Hood	chilli thrips	yes	yes	non-quarantine	no	
<i>Setora fletcheri</i> Holloway	leaf eating caterpillar	yes	no	quarantine	no	
<i>Spilosoma</i> sp.	leaf eating	yes	uncertain	quarantine	no	
<i>Suana concolor</i> (Walker)	leaf eating	yes	no	quarantine	no	
<i>Syllepte derogata</i> (F.)	cotton leaf roller	yes	no	quarantine	no	
<i>Tetranychus fijiensis</i> Hirst	mite	yes	no	quarantine	no	
<i>Thrips coloratus</i> Schmutz	thrips	yes	no	quarantine	no	
<i>Thrips hawaiiensis</i> Morgan	thrips	yes	yes	non-quarantine	no	
<i>Tirathaba ruptilinea</i> Walker	fruit boring caterpillar	yes	yes	non-quarantine	yes	
<i>Tiruvaca subcostalis</i> (Walker)	leaf eating caterpillar	yes	no	quarantine	no	
<i>Toxoptera aurantii</i> Boyer de Fonscolombe	citrus aphid	yes	yes	non-quarantine	no	
<i>Xyleborus fornicatus</i> Eichhoff	tea shot hole borer	yes	no	quarantine	no	

<i>Zeuzara coffeae</i> Nietner	red branch borer	yes	no	quarantine	no	
<b>ALGA</b>						
<i>Cephaleuros virescens</i> Kunze	agal leaf spot	yes	yes	non- quarantine	no	
<b>FUNGI</b>						
<i>Cercospora</i> sp.	leaf spot	yes	uncertain	quarantine	no	
<i>Cladosporium fulvum</i> Cooke	leaf mould	yes	yes	non- quarantine	no	
<i>Colletotrichum</i> sp.	leaf anthracnose	yes	yes	non- quarantine	no	
<i>Corticium salmonicolor</i> Berk. & Br. (Syn. <i>Erythricium salmonicolor</i> Br. & Broome) Bursdall	pink disease	yes	yes	non- quarantine	no	
<i>Diplodia durionis</i> Sac. & Syd.	dieback	yes	no	quarantine	no	
<i>Fusicoccum</i> sp.	twig blight	yes	uncertain	quarantine	no	

Species	Common Name	Present in Thailand	Present in Australia	Australian Quarantine Status	Present in Fruit Pathway (estimated risk)	Phytosanitary Requirement
<i>Meliola durionis</i> Hansf.	sooty mould	yes	no	quarantine	no	
<i>Oidium nephelii</i> Hadiwidjaja	powdery mildew	yes	no	quarantine	no	
<i>Pestalotia</i> sp.	leaf spot	yes	yes	non- quarantine	no	
<i>Phomopsis</i> sp.	leaf spot	yes	uncertain	quarantine	no	
<i>Phyllosticta durionis</i>	leaf spot	yes	no	quarantine	no	
<i>Phytophthora palmivora</i> (Butl.) Butler	root rot, patch canker, fruit rot	yes	yes	non- quarantine	yes	
<i>Rhizoctonia solani</i>	leaf fall, foliar blight	yes	yes	non- quarantine	no	
<i>Septobasidium</i> sp.	felt fungus	yes	uncertain	quarantine	no	
<b>NEMATODA</b>						
<i>Pratylenchus coffeae</i>	hypocotyl rot	yes	yes	non- quarantine	no	
<b>GASTROPODA</b>						
<i>Achatina fulica</i> (Bowdich)	giant African snail	yes	no	quarantine	no	

## 8. PESTS ASSOCIATED WITH DURIAN FRUIT THAT ARE OF QUARANTINE CONCERN TO AUSTRALIA

The list of pests associated with durian fruits that are of quarantine concern to Australia has been revised on the basis of recent biological information provided by respondents. The pests have been placed into two quarantine risk categories: high and low, based on the assessment of their overall phytosanitary risk and are listed below.

## List 1. Summary of Pests with High Quarantine Risk to Australia

1. *Mudaria luteileprosa* Holloway - durian seed borer (DSB)
2. *Planococcus lilacinus* Cockerell - coffee mealybug
3. *Saissetia* sp. - scale insect

## List 2. Summary of Pests with Low Quarantine Risk to Australia

1. *Coccus* sp. - soft scale
2. *Hemicentrus attenuatus* Funkhouser - horned treehopper
3. *Icerya* sp. - stem scale insect
4. *Pseudococcus* sp. - mealybug
5. *Remelana jangala ravata* Moore - fruit eating moth

## 9. ISSUES RAISED BY STAKEHOLDERS IN RESPONSE TO AQIS DRAFT IRA

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## 9.1 General Issues

### 9.1.1 Risk to Australian industry

#### **Issue 1:**

*The importation of durian poses an unnecessary and totally unacceptable risk and cost to durian and other tropical crop industries. Australia should not open the door to pest incursions.*

#### AQIS position

In accordance with the principles set out in the World Trade Organisation's Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures, Australia must ensure that SPS decisions are scientifically valid and justified. SPS measures must be applied only to the extent necessary to protect human, animal or plant life or health and must not be applied in a manner which would constitute a disguised restriction on international trade. Any decision on import access is made only after a detailed pest risk analysis (PRA) is conducted. The PRA considers the pests and diseases that are of quarantine concern to Australia, and makes recommendations on the measures needed to ensure that these pests and diseases are not introduced. The import risk analysis (IRA) process adopted by the Australian Government is consistent with the International Standard for Phytosanitary Measures, (ISPM) Publication No.2, *Guidelines for Pest Risk Analysis*. The standard provides a framework for transparent and robust scientific assessment of risks that may occur through legitimate trading practices and measures to reduce those risks. See also Issue 5.

#### **Issue 2:**

*There should be compensation for durian growers and other tropical fruit growers if incursion of pests impact on industry.*

#### AQIS position

The issue of compensation in the event of an incursion lies beyond the scope of the IRA. The issue of grower compensation will fall under the purview of the Australian Plant Health Council, which will be launched early in the year 2000. This council will comprise members from peak industry bodies, research and development corporations, State and Territory governments and the Commonwealth government. They will address issues related to incursion management, diagnostic services, compensation, market access, communication and coordination.

#### **Issue 3:**

*The effect on native flora: no examinations have been made of the impact of these exotic pests on Australian native flora and fauna.*

#### AQIS position

AQIS is satisfied that the importation of fresh durian fruit under the conditions determined by the IRA will present negligible risk to the environment, and will meet the obligations arising from the Administrative Procedures made under the Environmental Protection (Impact of Proposals) Act 1974.

### 9.1.2 IRA/PRA process

#### **Issue 4:**



*The IRA should consider all the insects in the durian-growing region in Southeast Asia as the border controls are lax.*

#### AQIS position

This IRA was initiated at the request of the government of Thailand and considers importation of durian from Thailand only. Where pests are likely to occur regionally, these have been considered in the PRA. It is the responsibility of Thailand under the International Plant Protection Convention to report any pest incursion to the regional plant protection organisations, the FAO and contracting partners. AQIS would undertake a review of the import conditions if a new pest of durian was detected in Thailand that had not been considered in this IRA.

#### **Issue 5:**

*The risk of imports should be zero.*

#### AQIS position

A zero risk quarantine policy would prevent movement of people and products into Australia. Within the ISPM No 1, *Principles of Plant Quarantine as Related to International Trade*, under the principle of managed risk, AQIS accepts that some risk of the introduction of quarantine pest always exists and agrees to a policy of risk management when formulating phytosanitary measures. An acceptance of a level of risk is implicit in these areas. AQIS seeks through the IRA process to establish an appropriate level of phytosanitary protection against pests of quarantine concern and to implement measures to ensure that level of protection is met.

#### **Issue 6:**

*Allow imports only to areas of Australia where durians are not grown.*

#### AQIS position

This would serve no purpose from a phytosanitary viewpoint, as fresh durian imported into Australia via Adelaide, Melbourne and Sydney could be distributed from these ports to other areas including durian production areas.

#### **Issue 7:**

*The associated assumptions and uncertainties involved in the IRA should be acknowledged and documented.*

#### AQIS position

Details of the import risk analysis process can be found in *The AQIS Import Risk Analysis Process Handbook* (1998). Risk analysis is a dynamic process consisting of three components: risk assessment, risk management and risk communication.

- Risk assessment is a scientifically based process and consists of several steps which include risk characterisation. Risk characterisation is the qualitative or quantitative estimation of the probability of occurrence and severity of known potential adverse effects in a given population. The risk assessment process takes account of the bio-economic factors such as the potential of introduction, potential of pest establishment and spread, potential damage in terms of loss in production, sales, exports and actual crop damage, and potential cost of eradication or containment.
- Risk management involves the process of weighing policy alternatives in the light of the results of risk assessment and involves selecting and implementing appropriate control options. In risk management,

the following are considered: available scientific evidence; relevant processes and production methods; relevant inspection, sampling and testing methods; prevalence of specific pest and disease; existence of pest free areas; relevant ecological and environmental conditions; and quarantine or other treatments.

- Risk communication is the interactive exchange of information and opinions concerning risk among risk assessors, risk managers, stakeholders and interested parties.

The IRA process as such recognises and documents any assumptions and uncertainties involved.

#### **Issue 8:**

*Some of the risk assessment seemed to be subjective rather than objective in approach, for instance the scales insects on durian have been concluded to be of economic importance to Australia.*

#### AQIS position

See preceding issue 7 with regards to the way AQIS conducts risk assessment of pests of quarantine concern. The three scale insects associated with durian fruit pathway have not been properly identified to species level. In the absence of biological and scientific information, AQIS undertakes a conservative assessment based on the knowledge of similar and/or related genera. If further information indicates that the pest is not of quarantine concern, AQIS will remove the pest from the quarantine pest list. On the basis of the latest information provided by Thailand Department of Agriculture, AQIS has relegated the quarantine risk of two of the scale insects from high to low.

#### **Issue 9:**

*A cost-benefit analysis (economic impact analysis) should be done.*

#### AQIS position

The social and economic impacts arising from the introduction of quarantine pests as a result of importation is taken into account in the import risk analysis. However, the potential competitive economic impact of prospective imports on domestic industries is not within the scope of AQIS import risk analysis and has no bearing on the outcome of the IRA. The Department of Agriculture, Fisheries and Forestry - Australia undertakes an assessment of the potential economic impact on Australian agricultural industries if imports are permitted in parallel with the AQIS IRA. The economic impact study provides advice to the Government on any structural adjustment assistance that may be warranted in the event that imports are predicted to have a significant effect on Australian primary producers.

### **9.1.3 Seed importation issues**

#### **Issue 10:**

*The import of fresh durian seeds should be restricted or banned.*

#### AQIS position

Import of fresh durian seed for planting purposes is not covered by this IRA. Over the past 30 years considerable quantities of durian seeds and durian scion material for planting have been imported from Southeast Asia, yet no incursions of DSB or other pests of quarantine concern have been detected. This indicates that current phytosanitary requirements for such materials are effective. The phytosanitary import conditions governing the importation of fresh durian fruit as proposed in this final IRA are different from those applied to the importation of frozen durian or durian seeds/scion materials for planting purposes, but will be equally effective in preventing incursions of DSB or other pests of quarantine concern.

**Issue 11:**

*The cold treatment of imported fruit should be mandatory to kill the seed.*

**AQIS position**

This IRA is concerned with the establishment of phytosanitary import conditions to reduce the risk of entry of quarantine pests that are associated with the importation of fresh durian fruit and not seed for planting purposes. See also Issue 10.

**Issue 12:**

*One seed was found to have been attacked by the durian seed borer in a consignment of seeds imported a few years ago in Cairns.*

**AQIS position**

The damaged seed was found in a single consignment of durian seed imported in 1995. There were no seed borers found.

**9.1.4 Chemical usage and residue issues****Issue 13:**

*Concern on pesticide residues in durian fruit resulting from widespread use of chemicals by Thai growers and that the chemicals used on durian in Thailand must also be those registered for use on durian in Australia.*

**AQIS position**

The issue of pesticide usage in Thailand is not a relevant consideration in the quarantine import risk analysis. However, in common with all other imported foods, durian fruit will be subjected to the Imported Food Inspection Program operated by AQIS. Subject to risk categorisation by the Australian New Zealand Food Authority, random samples of imported fruit may be taken for residue analysis. Appropriate action will be taken if relevant maximum residue limits are exceeded. Under international trade rules Australia cannot require that chemicals used on Thai durian exported to Australia must be limited to those also registered for use on durian in Australia.

**Issue 14:**

*Chemical accreditation and Code of Practice to be implemented for Thai durian growers.*

**AQIS position**

These activities are beyond the scope of the IRA.

**9.2 Pest Risk Assessment****9.2.1 Quarantine pest list****Issue 15:**

*The prevalence of pests would almost be the same in durian growing areas which share similar climatic and biological conditions like in the ASEAN countries; thus AQIS would not be totally correct in saying that the three incompletely identified pests are of quarantine concern to Australia.*

#### AQIS position

AQIS is of the opinion that the range of pests and their prevalence are unlikely to be the same in all durian growing areas in the tropics. For instance Malaysia and Indonesia have reported a wider range of pests attacking durian than Thailand. See also Issue 8.

#### **Issue 16:**

*Four pests of durian were deemed to be of quarantine concern by two Australian Farmer organisations. What are they and were there any study reports on them?*

#### AQIS position

The four pests listed to be of concern by the two Australian growers' organisations are the durian seed borer, *Mudaria magniplaga*; durian fruit borer, *Conogethes punctiferalis* (*Monogatus punctiferalis*); durian rind borer, *Tonica terasella* Walker; and durian psyllids, *Allocarsidara malayensis*. The first three occur in Malaysia and have not been reported in Thailand and are not considered in this IRA. The durian psyllids attack durian foliage and not the fruit. While they are pests of quarantine concern to Australia they require no specific phytosanitary measures as they would not be expected to occur in the fruit importation pathway.

#### **Issue 17:**

*Remove the quarantine pest status of *Pseudococcus* sp., *Coccus* sp. and *Icerya* sp.*

#### AQIS position

Based on the latest information from the Thailand Department of Agriculture that indicates these pests occur infrequently on durian in Thailand, AQIS has reduced the quarantine risk level of these three species from high to low.

#### **Issue 18:**

*Remove the quarantine pest status of coffee mealybug (*Planococcus lilacinus* Cockerell) as airbrushing under high pressure will get rid of the pest.*

#### AQIS position

This insect pest has not been detected in Australia. It is polyphagous, attacking a wide range of crops including crops of economic importance. It has a high potential for establishment and spread if it were to gain entry into Australia and thus has been determined to be of significant quarantine concern to Australia. AQIS considers that airbrushing in combination with an insecticide treatment will provide an appropriate level of protection against the introduction of this pest.

#### **Issue 19:**

*Concern that *Planococcus lilacinus* may infest custard apple, coffee, citrus, mango and lychee.*

#### AQIS position

AQIS is aware that *P. lilacinus* has a wide host range. AQIS is satisfied that airbrushing and insecticide treatments are adequate to provide security against its introduction.

#### **Issue 20:**

*Remove the quarantine pest status of the horned treehopper (Hemicentrus attenuatus Funkhouser) and the fruit eating moth Remelana jangala ravata Moore as they are not of economic importance in Thailand.*

AQIS position

Both species do not occur in Australia and are likely to be associated with the fruit importation pathway. Due to the scarcity of information on their biology it is difficult to assess their potential economic and biological impact in Australia. As a result, they are of quarantine concern to Australia and AQIS has assessed them to be of low quarantine risk based on their infrequent occurrence in Thailand.

**Issue 21:**

*What protocols are in place if Hemicentrus attenuatus's eggs are inserted into the fruit or peduncle?*

AQIS position

An Australian expert on membracids has advised AQIS that like other closely related membracids, the insect lays eggs in slits and crevices in the branch and stem. AQIS is of the opinion that external inspection would be sufficient to ensure security against this pest. Additionally, the measures proposed for mealybugs and scale insects, which include airbrushing and insecticide treatment would also assist in reducing the risk posed by this pest.

**Issue 22:**

*Is the fruit eating moth, Remelana jangala ravata - an external or internal feeder?*

AQIS position

Based on the latest information received from Thailand Department of Agriculture this pest feeds on the fruit skin. It was first reported in 1967 and has not been found in durian growing areas in Thailand since 1991.

**Issue 23:**

*Some pests have not been identified to species level and need to be fully identified before imports can be considered.*

AQIS position

AQIS adopts a conservative approach to pests that have not been fully identified and considers them to be of quarantine concern until such time as information on their biology and potential impact clearly indicate their status. AQIS requires phytosanitary management measures to reduce their risk to negligible levels before imports are allowed. See also Issue 35.

**Issue 24:**

*Is the information on Mudaria manipalga applicable to M. luteileprosa?*

AQIS position

Yes, they have very similar biology and life cycle (Khoo *et al.*, 1996; Buara, 1996) and require similar risk management options. Dissimilarities occur mainly in morphological characteristics.

**Issue 25:**

*Published information on the susceptibility of various durian cultivars to DSB is not available.*

### AQIS position

AQIS is cognisant of the lack of information on the susceptibility of various durian cultivars to DSB. A systems approach to pest management that is not cultivar specific would take account of this and would be applicable to all varieties of durian.

### **Issue 26:**

*Regarding DSB, the preventive measures that are favourably taken by Thai durian growers should be sufficient to reduce the risk. Also, there were no reports of DSB outbreak at economic levels in recent years. We feel that pests attacking other parts of the tree are more crucial than DSB.*

### AQIS position

AQIS has scientific evidence that DSB is the most destructive pest of durian in Thailand and other growing areas in southeast Asia. AQIS is aware from a recent publication (Buara, 1996) that infestation levels range from 1-30% in durian orchards in Thailand. AQIS is of the opinion that a systems approach to DSB management that is verified by fruit cutting inspection will provide a high level of security against the introduction of DSB.

## **9.2.2 Arthropod pest list**

### **Issue 27:**

*Serious concerns on durian psyllid, *Allocarsidara malayensis*, and *Scirtothrips dorsalis* and that they were not previously mentioned.*

### AQIS position

Both pests have been mentioned in the IRA. Durian psyllids infest durian leaves and do not attack durian fruit and are not considered in the fruit importation pathway. *S. dorsalis* is a durian flower pest, that is already present in Australia and hence not considered a quarantine pest.

## **9.2.3 Disease issues**

### **Issue 28:**

*Phytophthora palmivora has a wide host range and strains from durian may not be host specific and have a wide host range. Further, the fungus has been reported to be a pathogen on rambutan and may have potential to devastate native species and damage Queensland forests.*

### AQIS position

AQIS is aware that *Phytophthora palmivora* has a wide host range, attacking more than 140 species of economic, ornamental, shade and hedge plants. Strains of *P. palmivora* from durian have been found to be relatively host specific and with a narrow host range. Studies in Malaysia indicated that *P. palmivora* strains isolated from durian are highly pathogenic to durian, moderately pathogenic to papaya and non-pathogenic to seedlings of cocoa, jackfruit, mandarin orange, passionfruit, pulasan, rambutan and tangelo, (Chan and Lim, 1987; Tai, 1971). The existence of durian strains which differ in virulence or aggressiveness is not known, but five electrophoretic types of *P. palmivora* have been reported from durian (Mchau and Coffey, 1994). The pythiaceous fungus isolated from rambutan roots by Lynton Vawdrey of Queensland Department of Primary Industry was confirmed by Andre Drenth (Cooperative Research Centre for Tropical Plant Pathology, Queensland) to be a *Pythium* sp. and not a *Phytophthora*

sp. (L. Vawdrey, personal communications, 1999). *P. palmivora* has been known to attack papaya for many years in Queensland, causing fruit rot and root rot. There have been no reports of *P. palmivora* infecting any native tree species.

**Issue 29:**

*The existence of more virulent strains of Phytophthora palmivora in Thailand may adversely affect the durian industry in Australia.*

AQIS position

AQIS is not aware of any published information to substantiate that the strains in Thailand are more virulent so there is no justification for restricting entry of fruit on the assumption that the strains/physiological races of *P. palmivora* in Australia are different in virulence and other aspects from the strains in Thailand. Similarly, there is no evidence that the pathogen population in Australia is of limited diversity or that it is static.

**Issue 30:**

*The IRA is incorrect in stating that Phytophthora diseases are the most destructive diseases attacking durian in Australia as the disease is well managed in orchards in Queensland.*

AQIS position

AQIS has information that *Phytophthora* diseases are rife and destructive in durian orchards in north Queensland and to a lesser extent in the Northern Territory. Growers from Cape Tribulation to Innisfail have reported severe disease of durian trees due to *Phytophthora palmivora*. One orchard near Woopen Creek was almost completely devastated and will not grow durian again. The durian industry in Queensland considered *P. palmivora* to be the major constraint to future expansion in the wet tropical coast of north Queensland and assigned it the highest priority for research consideration. The durian industry further supported the successful applications for research grants to carry out studies on the diseases through the Rural Industries Research & Development Corporation and Australian Centre for International Agricultural Research.

**Issue 31:**

*Dipping of durian fruit in a broad-spectrum fungicide mixed with a wetting agent should be mandatory before any import consideration can be given.*

AQIS position

No diseases associated with durian fruit have been assessed to be of quarantine concern to Australia and therefore no mandatory fungicide treatment has been proposed in the IRA by AQIS.

## **9.3 Pest Risk Management**

### **9.3.1 General risk management issues**

**Issue 32:**

*There are too many risk management conditions for the different pests making it technically unrealistic, economically unfeasible and difficult for Thai farmers and officials to comply.*

AQIS position

AQIS has revised and streamlined the risk management measures for quarantine pests associated with durian as shown in the flow-chart in Section 6 Phytosanitary Import Requirements. AQIS is of the opinion that the revised phytosanitary requirements are technically justifiable and appropriate to ensure quarantine security for Australia. AQIS believes that the conditions are practical for Thai farmers and officials to implement.

**Issue 33:**

*The measures proposed are comparatively more stringent than those of other durian importing countries that just require general inspection and certification.*

AQIS position

Australia maintains its sovereign right to apply phytosanitary measures to the extent necessary to protect human, animal or plant life or health on the basis of a pest risk analysis and seeks to ensure Australia's appropriate level of protection from pests of quarantine concern is met. The phytosanitary measures proposed by AQIS in this IRA are based on relevant international standards, guidelines and recommendations.

**Issue 34:**

*Registration of grower's orchard is impractical, trade-restrictive and should not be mandatory.*

AQIS position

Registration of growers' orchards is mainly for purposes of auditing of IPM, pest monitoring/surveillance and field control measures, and for trace-back in case of non-compliance. Fruit destined for Australia would only be sourced from orchards which have been audited by AQIS and found to be comply with import conditions. It is not intended to be trade-restrictive.

### **9.3.2 Integrated pest management (IPM)**

**Issue 35:**

*Since the identity and biology of pests (Coccus sp., Icerya sp., Saissetia sp. and Pseudococcus sp.) are not known, how could IPM work for them?*

AQIS position

AQIS adopts a conservative approach on pests which have not been fully identified and whose biology is not known. In such cases they have been classified as quarantine pests as they are likely to be associated with the durian fruit. AQIS has removed IPM as a mandatory measure for these pests.

**Issue 36:**

*Economic damage levels (EDL) and economic threshold levels (ETL) should be established for each pest and for each proposed control option, and should be based on scientific evidence.*

AQIS position

Economic damage and economic threshold levels are used in IPM as triggers for the implementation of control measures particularly chemical application to reduce excessive use of chemicals. AQIS is satisfied that the ETL for DSB (one adult caught per trap), as recommended by Thailand DOAE, is technically sound and justifiable.



**Issue 37:**

*Registration and supervision of IPM and growers should be handled by DOAE instead of TPQ.*

AQIS position

AQIS has no objection to this request and has revised the conditions accordingly.

**Issue 38:**

*Concern on the effectiveness of the Thai IPM program for durian.*

AQIS position

To alleviate this concern, AQIS staff or AQIS appointed entomologist will audit and inspect registered growers' orchards during visits between February and June. IPM is only one facet of the DSB management system. Pre- and post-entry inspection of fruit will verify the efficacy of the IPM program for this pest.

**9.3.3 Area freedom****Issue 39:**

*Pest free area option should be available as Thailand is in the process of studying the potential of new durian producing areas in the northeast and Koh Chang Island and is considering internal domestic quarantine legislation. To consider Option B granting area freedom for DSB, and to combine both options A and B.*

AQIS position

AQIS has not rejected this option. AQIS will accept pest free area for both areas if data is provided that demonstrates areas are free and are subsequently maintained free of DSB. AQIS will assess area freedom against ISPMs No. 4, *Requirements for the Establishment of Pest Free Areas* and No. 6, *Guidelines for Surveillance*. AQIS would have to approve trap placement, type, density, servicing arrangements, plus buffer zone size and survey requirements for verification of the maintenance of area freedom. Additionally legislative regulations would need to be in place to prevent the movement of planting material and fruit between pest free and infested areas.

**9.3.4 Cultural field control methods****Issue 40:**

*Confirm that DSB leaves fruit to pupate in the soil and the implication on the risk analysis.*

AQIS position

Both Khoo *et al.*, (1996) and Buara (1996) confirmed that the mature larvae emerge from fruit to pupate in the soil for periods of more than 10 months. This long period in the soil may reduce pupal survival due to low soil temperatures during May to September that coincides with fruit imports and the adverse cold weather in southern Australian states. Importation of fresh durian fruit will mainly be through southern states due to the absence of direct shipping line or air link from Thailand to Darwin and Cairns. The likelihood of adults emerging from surviving pupae to mate and find developing fruit in durian growing areas is remote.

**Issue 41:**

*The measures against mealybugs and scales are not stringent enough.*

### AQIS position

See Section 6, Phytosanitary Import Requirements, for details.

#### **Issue 42:**

*Concern that the translucent bags can be punctured by durian thorns and the adoption of fruit bagging among Thai growers.*

### AQIS position

The bags are large enough to accommodate durian fruits of 4-6 kg. Thai authorities have not reported problems with the bags being punctured by the thorns. Bagging is proposed as only one of several measures used in conjunction with other components of the IPM program for addressing the phytosanitary risk posed by DSB.

## **9.4 Post-Harvest Management**

### **9.4.1 Packing houses/export centres**

#### **Issue 43:**

*Insect screening of packing houses/export centres should be made mandatory for the control of the 39 pests associated with durian.*

### AQIS position

Although 39 arthropod pests have been reported to be associated with durian in Thailand but not in Australia, only eight of these are associated with the fruit pathway and are of quarantine concern. AQIS is satisfied that the range of phytosanitary measures used in a systems approach to control DSB, and other measures to manage coffee mealybugs, scales and other quarantine pests are adequate to provide an appropriate level of security against the introduction of these pests. There is no need to insist that packing houses/export centres be insect-screened since the pests of quarantine concern are not sufficiently mobile to reinfest clean fruit..

### **9.4.2 Inspection and sampling**

#### **Issue 44:**

*The sample size should provide 99.9 % confidence level (100% inspection) that there is 0.05% or 0.01% infestation in the lot (for DSB).*

### AQIS position

The sampling method and techniques are based on the AQIS National Sampling Plan that is consistent with internationally accepted scientific procedures. The sampling plan requires that inspection for quarantine pests in samples must be achieved with a confidence level of 95% that not more than 0.5% of the units in the lot are infested. This equates to an acceptance level of zero units infested by the quarantine pest in a sample size of 450 units and 600 units for sample size of less than 1000 and more than 1000 units in a lot respectively. A 100 % level of inspection is unrealistic, unjustified and would constitute a trade barrier as all fruit for export would require cutting for DSB inspection.

#### **Issue 45:**

*The rough textured durian skin makes it impractical for inspection.*

AQIS position

Wearing gloves to handle the fruit for close inspection with a hand lens or a magnifying glass makes it practical.

**Issue 46:**

*The cut test for DSB should be done in the presence of AQIS staff.*

AQIS position

The packing house/export centre and post-harvest phytosanitary procedures including the cut test will be audited and found satisfactory by AQIS before exports will be permitted. See Phytosanitary Import Requirements for details.

**Issue 47:**

*The sample size of 600 is too large, both technically and uneconomical for the fruit cutting test as the prevalence of DSB is low on export fruit and it is difficult to detect visually, suggest that AQIS accepts field inspection at the pre-harvest stage.*

AQIS position

The difficulty of detecting DSB visually on the fruit is the reason that AQIS requires the fruit cutting method for detection of DSB. AQIS is of the opinion that field inspection of fruit at the pre-harvest stage ie. while the fruits are on the trees would be more difficult, cumbersome and technically unsatisfactory and would not guarantee any level of confidence of freedom from DSB. The sample size of 600 fruits for consignments of more than 1000 fruits is in accordance with AQIS National Sampling plan. Culled fruits can be included in the random sampling for DSB. If detection of DSB with alternative methods such as X-ray scanning, Gamma irradiation or other ultrasonic detection is proven efficacious AQIS will remove this mandatory fruit-cutting requirement.

**Issue 48:**

*Outline the status of the alternative techniques mentioned in the IRA namely X-ray scanning and the use of a stethoscope or other ultrasonic listening devices for DSB detection/inspection.*

AQIS position

At present the efficacy of such methods for detecting DSB has not been proven. It is explicitly stated in the draft IRA that AQIS will only consider these alternative phytosanitary detection methods if data is provided which demonstrates equivalence with the fruit cutting inspection method proposed.

**Issue 49:**

*AQIS inspectors should be stationed in Thailand on an annual basis, inspecting sources of proposed imports and for pre-export inspection.*

AQIS position

Inspection and auditing of IPM/surveillance/monitoring programs would be carried out during visits by AQIS staff or an AQIS appointed entomologist from February to June. Pre-export, post-harvesting handling and inspection will be audited by an AQIS officer before exports will be permitted. These import requirements will be reviewed after the first year of trade.

### 9.4.3 Disinfestation treatment

#### **Issue 50:**

*Specify the rates of oil to use for dipping to control mealybugs and scales together with some efficacy data.*

#### AQIS position

AQIS will follow the recommendation currently used for dipping of citrus fruit in a light, paraffinic oil or in an insecticidal soap suspension (see Section 6, Phytosanitary Import Requirements Item 5, for details). AQIS is of the opinion that this measure will mitigate the risk of introduction of coffee mealybug and *Saissetia* scales.

#### **Issue 51:**

*Mealybugs are waxy and water-resistant and may not be killed by dipping in insecticides.*

#### AQIS position

AQIS has information from Peter Taverner, (South Australia Research and Development Institute) that insecticidal soaps or lighter, paraffinic oils with higher solvency are very effective against mealybugs, scales and mites. They are used as a post-harvest dip to control these insects in citrus. They kill mealybugs and scales by suffocation, dissolution of the waxy epicuticular layers and desiccation.

#### **Issue 52:**

*Using compressed air to remove mealy bugs and other insects provides no guarantee of insect-free fruit.*

#### AQIS position

Airbrushing of fruit with compressed air, is used in combination with an insecticide treatment for the management of coffee mealybugs and scale insects as detailed in Section 6, Phytosanitary Import Requirements.

#### **Issue 53:**

*Methyl bromide fumigation should be mandatory for DSB.*

#### AQIS position

AQIS experience with methyl bromide fumigation is that it is not effective against internal feeders and does not provide an adequate level of protection against such pests.

### 9.4.4 On-arrival inspection

#### **Issue 54:**

*On-arrival inspection is unnecessary since consignment has undergone pre-export inspection and phytosanitary certification.*

#### AQIS position

On-arrival inspection is mandatory for all imported fruit unless it has been pre-cleared by AQIS officers. Phytosanitary certificates are issued by TPQ to indicate compliance with the required phytosanitary measures. AQIS officers will audit the fruit export process before any exports commence.

**Issue 55:**

*During on-arrival inspection, cut fruit according to sampling plan required as per Western Australia's requirement for mango seed weevil.*

AQIS position

Mango fruit for export to Western Australia is cut to inspect for mango seed weevil before fruit is exported and not on arrival. AQIS believes that the measures proposed for the detection of DSB prior to export provide an appropriate level of protection against the introduction of the pest. Fruit showing damage or punctures will be cut for internal examination for DSB on arrival.

**Issue 56:**

*What is the threshold level for rejection on arrival?*

AQIS position

One live quarantine pest found in the random sample. See Section 6, Phytosanitary Import Requirements Item 11.

**Issue 57:**

*Containers with defective seals or missing seals should be selectively destroyed not the whole consignment.*

AQIS position

This revision has been accepted by AQIS and incorporated into the revised Phytosanitary Import Requirements Section 6 at Item 10 - Verification of consignments for documentation errors. An alternative method for destruction of phytosanitary risk through a freezing treatment before release is described in Item 10.

#### **9.4.5 Post-harvest research and quality assurance program**

**Issue 58:**

*Should encourage more post-harvest research to kill DSB.*

AQIS position

AQIS encourages any post-harvest research to look into ways to disinfect, kill or detect DSB and would consider it as a potentially equivalent risk management option if its efficacy can be proven.

**Issue 59:**

*Thailand should develop a quality assurance program and post-harvest system eg SQF 2000.*

AQIS position

Thailand has a quality assurance program for durian fruit which is primarily concerned with the development of consistency in fruit appearance, quality and shelf-life. AQIS believes that the adoption of quality

assurance systems and Hazard Analysis and Critical Control Point (HACCP) system may be means of ensuring phytosanitary objectives are met but such systems are not necessary to effect appropriate risk management of importation of Thai durian under the considerations which AQIS has specified.

## 10. LIST OF RESPONDENTS

1. Astridge, David, Queensland Department of Primary Industries
2. Australian Citrus Growers Incorporated
3. Australian Custard Apple Growers Association
4. Boulders Tropical Fruit, Innisfail, Queensland
5. Bureau of Sugar Experiment Station, Queensland
6. Cooperative Research Centre for Tropical Plant Pathology
7. CSIRO Division of Entomology
8. CSIRO Plant Industry
9. Dingo Pocket Tropical Fruits, Tully
10. Doak, Gary, Brisbane, Queensland
11. Fleming, Angus, Queensland
12. Harvey Creek Exotic Fruits, Babinda, Queensland
13. Katter, Bob, Queensland
14. Mansfield, Peter and Julie, Mossman, Queensland
15. McAvoy, Kerry, Japoonvale, Queensland
16. McGuffie, K., Cooktown, Queensland
17. Natural Resources and Environment (Victoria)
18. Northern Territory Department of Primary Industry
19. Northern Territory Horticultural Association
20. NSW Agriculture
21. Ollera Tropical Orchards, Rollingstone, Queensland
22. Organic Producers Association of Queensland
23. Primary Industries and Resources South Australia
24. Queensland Department of Primary Industries, Brisbane
25. Queensland Fruit and Vegetable Growers
26. Queensland Fruit and Vegetable Growers - Mango Subcommittee
27. Rambutan and Tropical Exotics Local Producer Association
28. Scientific Advisory Services, Tully, Queensland
29. Thailand Ministry of Agriculture and Cooperatives
30. Thailand Department of Agriculture (Thailand Plant Quarantine)
31. Tropical Primary Products, Northern Territory
32. Whiston, Rob and Ruth, Queensland
33. Zappala, G & I, Cairns, Queensland
34. Zappala Tropicals Pty Ltd., Cairns, Queensland

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