Australian Government
Department of Agriculture, Fisheries and Forestry

INTERIM INSPECTOR GENERAL OF BIOSECURITY

An examination of the performance of the systems that the biosecurity divisions of the Department of Agriculture, Fisheries and Forestry has in place to detect and mitigate biosecurity risks before they get to Australia's border

Importation of plant nursery stock

INTERIM INSPECTOR GENERAL OF BIOSECURITY

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Executive summary

As part of the Interim Inspector General of Biosecurity's (IIGB) 2010-11 audit work plan, an examination was made of the effectiveness of the systems that the biosecurity divisions of the Department of Agriculture, Fisheries and Forestry (DAFF) has in place at the offshore stage of the biosecurity continuum.

This audit looked specifically at risk management measures for pests and diseases of plants that could be introduced into Australia via imported plant nursery stock.

This audit reviewed how DAFF monitors, accesses and assesses information regarding global risks associated with the importation of plant nursery stock and how this information is then used to set risk management measures.

This audit also examined the development and management of offshore quarantine schemes and arrangements.

The following audit findings and recommendations are based on the examination of three case studies. The supporting data analysis and audit outcomes of these case studies are outlined within the body of this report.

Key findings

The IIGB finds that the systems that DAFF has in place to detect and mitigate biosecurity risks before they get to Australia's border could be strengthened in five key areas:

- accountabilities and responsibilities for the monitoring, gathering and assessment of biosecurity information
- communication regarding Australian import conditions
- approval, auditing, monitoring and review processes
- engagement with National Plant Protection Organisations (NPPO)
- consistent guidance material for DAFF biosecurity officers.

The recommendations contained in this report aim to help DAFF strengthen these areas.

Case study findings

Gaining an understanding of global risks associated with the importation of nursery stock and using offshore information to set border controls, import conditions and pre-border activities

The IIGB examined *Phytophthora ramorum (Sudden oak death)* as a case study as it is an example of DAFF obtaining offshore information and using this to amend risk management measures for a range of nursery stock commodities.

Information gathering and sharing is pivotal in ensuring that biosecurity agencies, and associated industries, can respond appropriately to threats posed by new and emerging pests and diseases.

DAFF's information gathering and sharing activities are crucial to gaining an understanding of global pest and disease status. This includes changes of status in overseas countries as well as changing threat profiles of known or emerging offshore pests and diseases. It is this understanding that helps DAFF design and adapt systems offshore to prevent biosecurity risks reaching Australia's border.

This audit found that DAFF gathers and acts upon information through established networks and protocols.

In the course of this audit, the IIGB noted that *One Biosecurity - A Working Partnership (Beale)* recommended the establishment of an intelligence gathering and assessment group to monitor plant and animal disease status internationally. However, the IIGB was unable to be satisfied that clear accountabilities and responsibilities for the monitoring, gathering and assessment of biosecurity information exist under current DAFF organisational arrangements.

The IIGB was also unable to measure the timeliness and effectiveness of DAFF's response to gathered information, or conclude whether a faster, more structured approach to changing import conditions for this disease could have been beneficial, but notes that there has been no known introduction to Australia of this disease.

Specific recommendations relating to this case study are outlined in the *recommendations* table at the end of this chapter. They are also included in the body of the report.

Manage and develop offshore quarantine schemes and arrangements

Managing pre-border schemes - approved sources of tissue culture free of media

The IIGB examined *approved sources of tissue culture free of media* as a case study as it is an example of a current offshore quarantine scheme. The risk management measures for imports sourced from this scheme include components that are performed and certified by offshore third parties.

The IIGB believes that there are six key areas that can be strengthened to improve the management of offshore schemes, namely:

- Documenting the biosecurity risk involved with tissue culture imports.
- Introducing an approval process that records the physical location of the approved sources facility and identifies the persons responsible for its operational management and ownership.
- Ensuring the provision and application of consistent guidance documentation for DAFF officers (e.g. in relation to work instructions, manuals, guidelines etc) involved in the management of offshore schemes, including the inspection and testing of commodities.
- Improving communication with stakeholders (particularly information provided to importers and offshore approved sources) on import conditions, including packaging requirements (i.e. before consignments are sent) to facilitate inspection (i.e. at the border by DAFF officers).
- Implementing formal monitoring and review processes for approved sources.
- Engaging the relevant NPPO regarding the performance of approved sources.

Specific recommendations relating to this case study are outlined in the *recommendations* table at the end of this chapter. They are also included in the body of the report.

Developing offshore schemes - Phalaenopsis nursery stock from Taiwan

The IIGB examined arrangements for *approved Phalaenopsis nursery stock from Taiwan* as a case study as it is an example of an offshore quarantine scheme that is being developed. The risk management measures for imports sourced from this scheme include components that will be performed and certified by offshore third parties.

Successfully developing an offshore scheme presents a number of challenges for DAFF. This audit found that one of the main challenges for DAFF is ensuring on an ongoing basis that activities undertaken by offshore third parties comply with the requirements of Australia's import conditions.

The IIGB finds that the delivery of an effective and efficient audit program, coupled with monitoring and inspection arrangements that feed data back to the relevant areas of DAFF, are vital in ensuring the compliance of offshore schemes.

Specific recommendations relating to this case study are outlined in the *recommendations* table at the end of this chapter. They are also included in the body of the report.

Dr Kevin Dunn
Interim Inspector General of Biosecurity

Recommendations

Number	Recommendation	DAFF management response
Gaining an understanding of global risks associated with the importation of nursery stock and using offshore information to set border controls, import conditions and pre-border activities		
1	That DAFF establish an information gathering and assessment group (or other appropriate mechanism), as recommended in the Beale review, to consolidate the monitoring, gathering and assessment of international plant pest and disease status	Agree-in-principle
Managing offshore schemes - approved sources of tissue culture free of media		
2	That DAFF considers undertaking periodic laboratory identification of any microbial contamination detected on tissue culture during the arrival inspection process to confirm the absence of biosecurity risks	Agree
3	That DAFF reviews the approval process for sources free of media to ensure that it records the physical location of the approved sources facility and identifies the persons responsible for its operational management and ownership and includes relevant conditions of approval	Agree
4	That DAFF, following review of the approval process, finalise and implement the draft work instruction for the approval of sources free of media – *Work Instruction for the tissue cultures free of media*	Agree
5	That DAFF reviews the documentation that guides quarantine officers and Operational Science Program officers on the processes to follow when disease symptoms are detected at the border on tissue culture plantlets to ensure consistency across all regions	Agree
6	That DAFF implements better communication on Australian import conditions to offshore approved sources	Agree
7	That DAFF implements a formal monitoring and review process for approved overseas sources of nursery stock. This should include measurement against defined performance indicators and clearly outline measures that would be applied if an approved source fails to meet these indicators. The process should ensure that active approved sources have some form of review every two years. This recommendation should be considered across all current offshore sources approved by DAFF	Agree
8	That DAFF considers advising, at certain intervals, the NPPO of the approved sources home country of performance against indicators[1]. This recommendation should be considered across all current offshore sources approved by DAFF	Agree
Developing offshore schemes - Phalaenopsis nursery stock from Taiwan		
9	That DAFF implements an audit framework with a forward-looking audit schedule that is supported by appropriate audit tools	Agree
10	That DAFF implements monitoring and feedback arrangements at the border inspection stage to measure the effectiveness of the alternative risk management measures implemented by Taiwan	Agree
11	That DAFF considers the broader application of recommendations 9 and 10, should alternative arrangements be introduced in other countries and/or for other commodities	Agree

[1] This should be considered within the context of International Standard for Phystosanitary Measures (ISPM) 13 - *Guidelines for the notification of non-compliance and emergency action.*

Conduct of the audit

The role of the IIGB

In 2008, the Australian Government agreed in principle to establish a statutory office of the Inspector General of Biosecurity. The role would be established under new biosecurity legislation, which is currently being developed.

On 1 July 2009, pending the enabling biosecurity legislation, the government appointed an Interim Inspector General of Biosecurity (IIGB).

The IIGB role is independent of DAFF's biosecurity divisions. The IIGB reports to the Minister for Agriculture, Fisheries and Forestry and makes key findings and recommendations publicly available. The department provides administrative support to the IIGB through the Biosecurity Secretariat, a dedicated secretariat team in the Corporate Services Division.

The scope of the IIGB role covers the programs, systems and risk management measures that are the responsibility of DAFF's biosecurity divisions – it does not routinely extend to the review of Australia's biosecurity policy.

The IIGB's program

The IIGB's program of activities includes a comprehensive agenda of systems performance audits designed to provide assurance of biosecurity systems and risk management measures across Australia's biosecurity continuum.

To form the program, the IIGB collates potential audit topics from a variety of sources, including:

- DAFF consultation
- industry consultation
- outcomes of other relevant reviews/inquiries (e.g. Australian National Audit Office and internal departmental audits)
- observations from previous IIGB audits
- media coverage
- expert advice.

The IIGB prioritises the audit topics. This includes an indicative qualitative risk assessment to assess the impacts of and likelihood of breakdowns in the biosecurity systems being audited. The IIGB also considers the following factors:

- IIGB resources
- avoidance of duplication with other assurance/audit activities
- ensuring balance of effort and coverage over the biosecurity continuum and sectors
- ensuring balance of effort and coverage of the elements of the risk management processes outlined in the ISO 31000:2009 standard.

Audit objective

This audit examined the performance of the systems that DAFF has in place to detect and mitigate biosecurity risks before they get to Australia's border. This audit looked specifically at risk management measures for pests and diseases of plants that could be introduced into Australia via imported nursery stock.

Scope

This audit was limited to biosecurity risks associated with the importation of nursery stock through formal importation channels. It included examination of the systems, activities, policies, procedures and processes that support the importation process; namely, the means by which DAFF:

- gain an understanding of global biosecurity risks associated with the importation of nursery stock
- use offshore information to set border controls, import conditions and offshore activities
- develop and manage offshore quarantine schemes and arrangements.

Out of scope

This audit did not examine:

- risk management measures associated with the potential entry of pests and diseases associated with nursery stock through other pathways, such as illegal importation
- processes and procedures relating to border and post-border risk management measures for imported nursery stock.

Methodology

The IIGB initially reviewed relevant background documentation within the scope of the audit. This review provided the broad overview for the audit focus.

The IIGB then selected three case studies to examine. The case studies were selected through a process that included data analysis, consultation with stakeholders and scenario review.

The case studies were examined on behalf of the IIGB by an auditor from the Biosecurity Secretariat.

Case study	**Why selected**
Phytophthora ramorum (sudden oak death)	The case study is an example of DAFF obtaining offshore information and using this to amend its risk management measures for the importation of a range of nursery stock commodities
Approved sources of tissue culture free of media	The case study is an example of DAFF managing an existing offshore scheme. The risk management measures for imports originating from these sources include components that are performed and certified by offshore third parties
Phalaenopsis nursery stock from Taiwan	The case study is an example of DAFF developing an offshore scheme. The risk management measures for imports of *Phalaenopsis* orchids sourced from Taiwan include components that are performed and certified by offshore third parties

The audit findings and recommendations are based on the examination of these case studies.

The methodology for the *approved sources of tissue culture free of media* case study included:

- document examination
- data review
- interviewing of key DAFF officers
- observation and verification of relevant work practices in DAFF.

The methodology for the *Phytophthora ramorum (sudden oak death)* and the *Phalaenopsis nursery stock from Taiwan* case studies included:

- document examination
- interviewing of DAFF key officers.

No overseas activities were undertaken in the conduct of this audit.

Issues or observations observed that are outside the scope of this audit

The findings and recommendations made in this audit are in accordance with the scope of the audit. Other issues or concerns - that may be outside the scope of the audit, but noted and observed by the IIGB during this audit process - can be reflected in the IIGB's audit work program and/or provided via the IIGB's correspondence to the minister and DAFF's biosecurity divisions.

Background and context

DAFF's offshore systems seek to minimise biosecurity risks reaching Australia's border through a number of activities. These include:

- surveillance and understanding of global risks
- risk profiling and import risk assessments
- the setting of border controls and import conditions
- developing and managing offshore schemes and offshore arrangements.

DAFF manages the delivery of these activities across a number of its biosecurity divisions. The Plant, Animal and Food divisions provide scientific and technical advice, including the provision and verification of plant based guidance material (e.g. work instructions), while the Quarantine Operations Division manages the employees who undertake various border control activities.

One of the commodities that DAFF manages through its offshore systems is nursery stock. Nursery stock consists of plants and flowers in various forms, e.g. cuttings, tissue culture and bulbs.

If biosecurity measures are insufficient, plant pests and diseases could potentially be introduced to Australia via imported nursery stock. These pests and diseases could negatively impact a wide range of Australian horticultural industries; such as nursery and garden, grains, horticulture and viticulture. These industries could provide a secondary pathway for the broader spread of these pests and diseases to landscaped areas and the natural environment, for example by the planting of an infected plant supplied by a nursery in a home garden next to a native forest.

Pests and diseases associated with nursery stock could potentially enter Australia through a number of pathways, such as:

- on or with plants imported through formal importation channels
- with other imported goods
- on or with illegally imported plants and/or goods
- in packaging
- natural movement.

From 2005 to February 2011 there were 21,491 permits issued for nursery stock commodities to be imported into Australia through formal importation channels – 86.5% of these were for plant tissue cultures.[2]

[2] Data supplied by DAFF Biosecurity Plant Division

How does DAFF gain an understanding of the global risks associated with the importation of nursery stock?

DAFF gains an understanding of the global risks associated with the importation of nursery stock through the monitoring of information about global pests and disease status.

DAFF monitors the following sources of international plant pest and disease status:

- **International Plant Protection Convention (IPPC)**

Signatories to the IPPC are required to report the occurrence, outbreak and spread of pests (including pests and diseases relating to plants) in areas for which they are responsible. The convention has 177 signatory countries (known as contracting parties).

Member countries communicate their pest status, including notification of any pest outbreaks, through the IPCC website: www.ippc.int.

- **National Plant Protection Organisations (NPPO)**

NPPOs are organisations established by governments to discharge the functions specified by the IPPC.

- **North American National Plant Protection Organisation (NAPPO)**

NAPPO provides up-to-date information on pest situations of significance to North America.

NAPPO communicates pest status, including notification of any pest outbreaks, through the NAPPO Phytosanitary Alert System website: www.pestalert.org.

- **Meetings with international biosecurity organisations**

DAFF representatives regularly attend international meetings, such as the bilateral meetings with New Zealand or the USA, and the "Quads" meetings between Australia, New Zealand, USA and Canada.

At these meeting discussions are held in regards to the emergence and spread of pests and pathogens of significance to Australia's Biosecurity.

- **ProMED - mail**

ProMED-mail - the Program for Monitoring Emerging Diseases - is an Internet-based reporting system dedicated to rapid global dissemination of information on outbreaks of infectious diseases and acute exposures to toxins that affect human health, including those in animals and in plants grown for food or animal feed.

- **Scientific research**

Scientific literature published in peer reviewed journals and research papers presented at relevant symposia.

How does DAFF use offshore information to set risk management measures?

DAFF assesses information gathered on global pest and diseases to determine whether current risk management measures are sufficient to mitigate the risk of introducing exotic pests and diseases into Australia. This is called a risk analysis.

If DAFF receives an import proposal for nursery stock that has not previously been imported into Australia, then they will determine the need for, and type of, risk analysis that should be undertaken; this will usually take the form of a non-regulated analysis, such as a policy review or pest risk analysis.

DAFF may also undertake a risk analysis when the risk profile of nursery stock that has previously been brought into Australia has changed or may change. The result of this kind of risk analysis may change the risk management measures that are in place for a particular kind of nursery stock.

Types of risk analysis

- **Import Risk Analysis**

  Import risk analysis (IRA) assists DAFF in considering the level of biosecurity risk that may be associated with the importation or proposed importation of animals, plants or other goods into Australia. If the risks are found to exceed the level of risk that is acceptable to Australia, risk management measures are proposed to reduce them to that level. If the quarantine risks cannot be reduced to achieve an acceptable level of protection, the commodity will not be allowed to be imported.

  The Executive Manager of DAFF's Plant Division (Biosecurity Australia's Chief Executive) determines if a risk analysis will be conducted as an import risk analysis based on criteria outlined in the *Import Risk Analysis Handbook 2007 (update 2009)*. There have been no completed IRA's on nursery stock.

- **Policy and scientific reviews and pest risk analysis**

  A risk analysis which does not meet the criteria for an IRA will be undertaken as a non-regulated analysis of existing policy.

  These reviews are triggered by a number of factors:

  - An import permit request for nursery stock not previously imported into Australia
  - An import proposal for nursery stock not previously imported into Australia (initiated by an importer, another country, or industry)
  - Environmental scan by DAFF.

- **Weed risk assessment process**

  The weed risk assessment (WRA) process is a science-based quarantine risk analysis tool for determining the weed potential of proposed new plant (that are not currently in Australia) imports.

DAFF conducts WRAs on all new plant species proposed for introduction into Australia as seeds, tissue culture or any other material for propagation.

The weed risk assessment is a question and scoring exercise with three possible outcomes:

- the plant will be accepted for importation
- the plant will be rejected for importation
- the plant will be rejected for importation pending further evaluation.

International standards

DAFF also considers the following international standards when setting risk management measures.

- **World Trade Organisation (WTO) - Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement)**

  The SPS Agreement provides a framework of rules to guide WTO Member countries in the development, adoption and enforcement of sanitary (human and animal health) and phytosanitary (plant health) measures.

  All WTO Member countries are signatories to the SPS Agreement, under which they have both rights and obligations. The SPS Agreement provides WTO Member countries with the right to use SPS measures to protect human, animal and plant life or health. Each WTO Member country is entitled to maintain a level of protection it considers appropriate to protect life or health within its territory. This is called the appropriate level of protection (ALOP).

  The basic obligations are that SPS measures must:

  - be applied only to the extent necessary to protect life or health and not be more trade restrictive than required
  - be based on scientific principles and not maintained without sufficient scientific evidence, and
  - not constitute arbitrary or unjustifiable treatment or a disguised restriction on trade.

- **International Plant Protection Convention**
- **International Standards for Phytosanitary Measures**

  International Standards for Phytosanitary Measures (ISPMs) are adopted by contracting parties to the IPPC through the Commission on Phytosanitary Measures. ISPMs are the standards, guidelines and recommendations recognised as the basis for phytosanitary measures applied by Members of the World Trade Organization under the SPS Agreement.

What risk management measures does DAFF apply to the importation of nursery stock?

The key risk management measure to minimise biosecurity risks reaching Australia is contained with the *Quarantine Act 1908* - it is the power vested in the Governor-General of Australia to prohibit by proclamation the introduction or importation of certain goods into Australia.

The Governor General has used this power to protect Australia from the risks associated with nursery stock by proclaiming (*Quarantine Proclamation 1998*) that the importation of a living plant is prohibited unless a permit is granted by the Director of Quarantine (the Secretary of the Department of Agriculture, Fisheries and Forestry) - the exception is orchid tissue culture in certain circumstances.

The proclamation has the effect of allowing DAFF to assess the risks associated with the importation of specific types of nursery stock and to then implement risk management measures to control the associated risks. These controls range from refusing to grant an import permit (eliminating the risk) to granting an import permit with a range of risk management measures (disease testing, quarantine etc) to reduce any risk to appropriate levels (ALOP) that are required to be adhered to by the importer.

DAFF manages this through the import permit process.

Import permit process

DAFF regulates the entry of plant material for propagation through import permits. Import permits state the import requirements that must be met for entry into Australia.

DAFF assesses all import permit applications to determine the quarantine risks posed by the proposed import and whether conditions are required to reduce the level of identified risk to one that is acceptably low (e.g. fumigation with methyl bromide, inspection on arrival, growth of plants in post entry quarantine, etc).

DAFF's import process is supported by a publicly accessible database known as ICON. It contains the import conditions, which outline the risk management measures, for more than 20,000 plant, animal, microbial, mineral and human products. ICON has a dual purpose: firstly, it provides information to the public on the import process and the import conditions for commodities; secondly, it provides instructions to DAFF staff on the entry management process, including the risk management measures, for each commodity.

The process is also supported by on-line and manual permit systems and a range of forms. The systems are intended to support the consistent application of risk management measures for a specific plant. The process is also a way of collecting information about imports that can feed into the setting of risk management measures.

General nursery stock import conditions

DAFF has in place general import conditions that set out the minimum risk management measures for all nursery stock. These include:

- All consignments must be accompanied by either a valid Import Permit or means to allow the identification of the Import Permit.

- All plant material must be free from soil, disease symptoms and other extraneous contamination of quarantine concern.
- Plant material must be packed in clean, new packaging.
- Plant material must be labelled with botanical names including both genus and species. Unidentified nursery stock is subject to re-export or destruction at cost to the importer.
- All rooted plants, with some exceptions, will be subject to microscopic examination by DAFF officers to inspect for the presence of plant parasitic nematodes.

DAFF risk ratings for nursery stock

The DAFF framework for the management of imported nursery stock includes the assigning of a risk level to each plant species: high, medium or low. This risk level then dictates the risk management measures (beyond the general import conditions) to be applied.

As the scope of this audit was offshore activities, the IIGB did not examine the nursery stock risk rating methodology. However, the IIGB noted that DAFF is undertaking a review of imported medium risk nursery stock pathway, policy and operational procedures.

High risk rating

High risk nursery stock has been assessed as posing a high biosecurity risk to Australia. The plants that attract this risk level are usually hosts or vectors of pests and diseases that pose a significant threat to Australian plants (e.g. *Phytophthora ramorum*, Citrus canker, Narcissus bulb fly, Pierce's disease, Huanglongbing (Citrus greening disease)).

What kinds of plants make up high risk nursery stock?

Example are: lemon, lime, mandarin (*Citrus species*); apple (*Malus species*); stonefuit (*Prunus species*); gum trees (*eucalyptus species*); grape (*Vitis species*).

What risk management measures are imposed on high risk nursery stock?

High risk nursery stock has a number of conditions imposed: only tissue cultures and/or budwood may be permitted entry into the country; whole rooted plants may not be permitted entry. They are required to be grown for a period in a DAFF post entry quarantine facilities and require extensive disease testing and screening as well as visual inspections to confirm the absence of pests and diseases.

All high risk nursery stock is subject to fumigation with methyl bromide upon arrival in Australia.

Medium risk rating

Medium risk nursery stock has been assessed as posing a lower biosecurity risk to Australia; it includes the majority of plants that have not been assessed as having a high biosecurity risk.

What kinds of plants make up medium risk nursery stock?

The majority are ornamental varieties: e.g. orchids, bromeliads and yucca.

What risk management measures are imposed on medium risk nursery stock?

They are required to be grown in a post entry quarantine facility but, unlike high risk nursery stock, they are permitted to be grown in a privately owned facility (known as quarantine approved premises (QAP)).

Medium risk nursery stock does not require active disease testing, but is screened for pests and diseases through observation and inspection (at least two visual inspections) during the period (three months or until adequate growth has been observed) within a post entry quarantine facility.

Low risk rating

Low risk nursery stock has been assessed as posing a low biosecurity risk to Australia due to their propagation method and lower risk pathway – they are usually imported as seed or tissue cultures.

What kinds of plants make up low risk nursery stock?

Specific types of ornamental plants.

What risk management measures are imposed on low risk nursery stock?

They do not require a period of growing and disease screening in a post entry quarantine facility. They may be inspected at the point of entry by a quarantine officer and released from quarantine if no pests or diseases are observed.

How does DAFF develop and manage offshore quarantine schemes and arrangements?

DAFF's offshore quarantine schemes and arrangements seek to prevent biosecurity risks reaching Australia's border. The risk management measures for imports sourced from these schemes and/or sources include components that are performed and certified by offshore third parties.

Examples of offshore schemes and arrangements relevant to the importation of nursery stock

- **Approved sources of tissue culture free of media**

  Plant tissue culture imported from these approved sources does not have to include the growth media that the tissue culture plantlets have been grown in.

  Low and medium risk plant tissue cultures imported from these approved sources do not require a period of growth and disease screening in a post-entry quarantine facility.

- **Bloembollenkeuringsdienst (BKD) Scheme (Netherlands)**

  Bulbs produced and certified under the Bloembollenkeuringsdienst (BKD) Scheme, Netherlands, only require a minimum of six weeks open quarantine growing in a post entry quarantine facility and one field inspection. Non-Certified bulbs require 12 weeks, or a sufficient growth period, in the facility and two field inspections.

- **NAKB certified sources in the Netherlands for Chrysanthemum x morifolium**

  Larger volumes (greater than 500 plants per consignment) of plants can be imported for plants certified under this scheme.

- **Naktuinbouw (NAKT) Scheme, Netherlands**

  Bulbs for *Dianthus caryophyllus* (Carnations) and *Freesia* certified under the NAKT scheme can be grown in open quarantine in a PEQ facility and only require one field inspection. Non-Certified bulbs require 12 weeks, or a sufficient growth period, in the facility and two field inspections.

- **Approved sources for grapevines (Vitis spp)** – one approved source in the USA; two in Canada

  Plants from the approved sources only require visual assessment during post entry quarantine (plants from non-approved require testing).

- **Approved sources for stone fruit (Prunus spp)** – one approved source in the USA; two in Canada; one in Switzerland.

  Plants from the approved sources only require visual assessment during post entry quarantine (plants from non-approved require testing).

- **Approved source for berries (Rubus spp)** – one approved source in Scotland.

  Plants from the approved sources only require visual assessment during post entry quarantine (plants from non-approved require testing).

- **Approved source for strawberry (Fragaria spp)** – one approved source in the UK; two in the USA.

  Plants from the approved sources don't require mandatory pathogen testing (plants from other sources require testing).

The IIGB selected *approved sources of tissue culture free of media* as an example of a current offshore scheme to examine as a case study for this audit due to:

- the high level of plant tissue culture imported into Australia
- the high numbers of offshore facilities obtaining approval under this scheme
- the wide geographic disbursement of these facilities.

Case study – gaining an understanding of global pest and disease status and using the information to amend risk management measures
Phytophthora ramorum (Sudden oak death)

Purpose of examining *Phytophthora ramorum* (sudden oak death)

The IIGB examined this case study as it is an example of DAFF obtaining offshore information and using this to amend its risk management measures for the importation of a range of nursery stock commodities.

Background

Phytophthora ramorum (sudden oak death)

Phytophthora ramorum is a serious pathogen of a number of ornamental and amenity species of plants that is emerging in a number of overseas countries. It causes dieback, cankers and often death of a number of plant species.

Its host range is large, and is continuing to expand. Nursery stock and infested plant material are the most likely means of long-distance transport of the pathogen. It can also be spread in soil and water.

An incursion of *Phytophthora ramorum* into Australia could result in movement restrictions for numerous ornamental and amenity species. It could also require additional management practices for amenity species (particularly oaks) in a number of Australian cities.

Phytophthora ramorum has been identified as an extreme or high risk by a number of Australian industries - including nursery and garden, avocado and plantation timber.

Any host plant species originating from a country where *Phytophthora ramorum* is present is classified as high risk and is subject to import conditions. Conditions include:

- A prohibition on the import of plant material other than tissue cultures from a host country; this includes cut flowers and foliage, untreated timber and wood (with some exceptions for areas of freedom).
- Imports of tissue culture of host species are restricted to a government post entry plant quarantine facility where they must undergo screening for the pathogen.
- Any nursery stock of host species originating from a country where *Phytophthora ramorum* is not present must include an import permit and a phytosanitary certificate – the phytosanitary certificate should state "Sudden Oak Death (*Phytophthora ramorum*) is not known to occur in [insert country of origin]."

DAFF pest and disease status monitoring

DAFF (Plant Biosecurity) has been monitoring the offshore status of *Phytophthora ramorum* for some time. It has also been undertaking a comprehensive risk analysis of *Phytophthora ramorum*, including its distribution and host range.

The detection of *Phytophthora ramorum* in plant nurseries was reported by an overseas exporting country through its NPPO during 2003, 2006 and 2008. The country managed these detections through eradication programs and regulations to prevent its spread. DAFF did not consider the country to be a host of the disease as a result of the eradication measures taken. During this time, any imports to Australia of nursery stock plants from this country were required to undergo a period of growth in quarantine approved premises for screening of any signs of disease.

A further report regarding the detection of *Phytophthora ramorum* at its plant nurseries was issued by the country during September 2009 through the IPPC website. Plant Biosecurity became aware of this report in early 2010 following an enquiry by DAFF (Plant Quarantine Operations) highlighting this report, and asking whether the import conditions for nursery stock from this country needed reviewing.

Plant Biosecurity announced *emergency measures*[3] during April 2010 to prevent the introduction of *Phytophthora ramorum* into Australia. These measures recommended the ceasing of import permits for nursery stock (plant or plant parts) of known *Phytophthora ramorum* hosts from that country.

Plant Quarantine Operations amended risk management measures to reflect this country as a host country of *Phytophthora ramorum*.

Plant Quarantine Operations varied current import permits for importation of *Phytophthora ramorum* hosts to reflect amended import conditions.

Plant Biosecurity has gathered further information and commenced a review of the *emergency measures*. This review is on-going.

IIGB audit findings

Information gathering and sharing is pivotal in ensuring that biosecurity agencies, and associated industries, can respond appropriately to threats posed by new and emerging pests and diseases.

DAFF's information gathering and sharing activities are crucial to gaining an understanding of global pest and disease status. This includes changes of status in overseas countries as well as changing threat profiles of known or emerging offshore pests and diseases. It is this understanding that helps DAFF design and adapt systems offshore to prevent biosecurity risks reaching Australia's border.

This case study demonstrates that DAFF gathers and acts upon information through established networks and protocols.

In the course of this audit, the IIGB noted that *One Biosecurity - A Working Partnership (Beale)* recommended the establishment of an intelligence gathering and assessment group to monitor plant and animal disease status internationally. However, the IIGB was unable to be satisfied that clear accountabilities and responsibilities for the monitoring, gathering and assessment of biosecurity information exist under current DAFF organisational arrangements.

[3] ISPM 1 & 13

The IIGB was also unable to measure the timeliness and effectiveness of DAFF's response to gathered information, or conclude whether a faster, more structured approach to changing import conditions for this disease could have been beneficial, but notes that there has been no known introduction to Australia of this disease.

Recommendation 1

That DAFF establish an information gathering and assessment group (or other appropriate mechanism), as recommended in the Beale review, to consolidate the monitoring, gathering and assessment of international plant pest and disease status.

Case study – manage offshore schemes
Approved sources of tissue culture free of media

Purpose of examining approved sources of tissue culture free of media

The IIGB examined *approved sources of tissue culture free of media* as it is an example of a current offshore scheme. The risk management measures for imports sourced from these sources include components that are performed and certified by offshore third parties.

Background

From 2005 to February 2011 there were 21,491 permits issued for nursery stock commodities to be imported into Australia – 86.5% of these were for plant tissue cultures.

Plant tissue culture is a technique used to propagate plants under sterile (laboratory like) conditions. It is used extensively in the nursery industry as it enables the rapid multiplication and year round production of plants. It is also an ideal medium for transporting plants between countries.

As the plant tissue culture process is performed under sterile conditions, tissue culture plantlets typically pose a lower risk of being infected with quarantine pests and fungal and bacterial diseases. However, as evidenced by this audit, there have been a number of cases where imported tissue culture plants have been destroyed because of the presence of disease symptoms, pests, or other unidentified contaminants.

Plant tissue cultures are imported into Australia in culture containers, glass bottles, test tubes, plastics bottles or tubs. These containers usually include the plant tissue culture and a type of growth media[4] that the tissue culture has been incubated in. The media, among other things, makes it easier for a quarantine officer to establish if there are contaminants present.

Plant tissue cultures in growth media

There are currently 78 (as at 23 March 2011) offshore facilities approved by DAFF as accredited sources of low and medium risk nursery stock tissue cultures free from growth

[4] Media - a liquid or gel (e.g. agar) designed to support the growth of microorganisms or cells to enable identification of plant pests

media. Plant tissue culture imports sourced from these sources do not have to include the growth media that the tissue culture plantlets have been grown in. The consignment is inspected in the exporting country by the NPPO before the plantlets are removed from media and asceptically transferred to the container in which they will be exported in. A phytosanitary certificate from the NPPO declaring that *the consignment was inspected before the media was removed and found to be free of contamination and was then aseptically transferred under supervision to sterile containers which were then sealed and not subsequently re-opened* must accompany the consignment.

One of the advantages of importing tissue culture plantlets free from media into Australia is the reduced weight of the consignment compared to those that include growth media – this means lower freight costs for the importer.

Plant tissue cultures free from growth media

Low and medium risk plant tissue cultures imported from these approved sources do not require a period of growth and disease screening in a post-entry quarantine facility.

Consignments are inspected for freedom from quarantine risk material and disease symptoms at the point of entry to Australia by a quarantine officer. Imported tissue culture plants are released from quarantine if they are free of obvious pests, including bacterial and fungal disease symptoms and contamination.

IIGB audit findings

The following findings are based on a Biosecurity Secretariat Auditor, on behalf of the IIGB, undertaking:

- a desktop review of DAFF's processes and procedures as they relate to approved sources of tissue culture free of media
- audit fieldwork at DAFF's Central East and South East Region facilities.

Desktop review of DAFF assessment and approval process for sources free of media

DAFF requires a formal application to be made for approval of offshore sources of tissue culture free of media. Plant Quarantine Operations is responsible for the assessment and certification (approval) of these sources.

Essentially, the request from a source to be approved as a tissue culture source free of media is an application to amend import and permit conditions (C7301 and PC0111). If the source is approved, they are added to these conditions as an approved source. Import permit applications are then assessed against these conditions and, if they meet the conditions (e.g. the source of the tissue culture free of media that the imported tissue cultures will be sourced from is included in these conditions) then the permit will be granted.

The process for certification of tissue culture laboratories involves a desktop audit on the facility before any approval is granted. This involves the source providing the following documents which are reviewed and assessed by a Technical Officer within Plant Quarantine Operations:

- A letter from the overseas NPPO or equivalent authority stating that the facility has been inspected and found to be sanitary and well and also states that the facility performs procedures under aseptic techniques, uses sterile media that is free of antibiotics and states that plantlets for export to Australia will be inspected prior to removal from agar and will be rejected if contamination or disease is found.
- A full list of plants housed at the facility.
- A statement of where in the facility the Australian stock is located.
- Details of the crop hygiene and disease screening processes undertaken on all plants at the facility and specifically those destined for the Australian market.
- A diagram of the facility and pictures of the tissue culturing processes and laboratories used to house the stock.
- Any further details/documents the Technical Officer has identified that required to answer any questions raised.

The following steps are taken if the Technical Officer approves the source:

- The Technical Officer adds the approved source to the relevant conditions on ICON and submits the change to an Approving Officer for approval along with a completed *ICON Notification of Change/Request for Approval* form.
- The Approving Officer (a delegate under the Quarantine Act) reviews and, if appropriate, approves the amended ICON conditions.
- A letter is sent to the source advising them of the approval and the relevant conditions that apply to the import of tissue culture free of media, in particular the requirement for each consignment to be accompanied by a Phytosanitary certificate from the NPPO stating:

  > *Prior the removal of the plant tissue from the agar, the tissue cultures were inspected and found to be free of contamination. The plant tissue was aseptically transferred under supervision to sterile containers which were then sealed and not subsequently re-opened.*

If the facility is unable to obtain the letter from its NPPO, or does not supply sufficient information to carry out an assessment, then approval is not granted and the application is rejected and filed.

Desktop review findings

There is no work instruction for assessing sources of tissue cultures free of media; however, there is a draft work instruction which outlines the process.

The Biosecurity Secretariat Auditor reviewed the draft work instruction and found that it did not contain processes that would ensure a DAFF officer ascertained the physical address/location of the facility or the ownership and management of the offshore facility.

The work instruction also did not include any guidance on how to manage a change in ownership or usage of a facility once it was approved by DAFF.

The Biosecurity Secretariat Auditor also reviewed the documentation relating to the approval of six sources from five countries approved during the period November 2002 to May 2010.

Overall, the review found that, in the majority of case, the documentation required by DAFF was provided and the review process as outlined above was followed. The major exceptions were:

- The full list of plants held at the facility was not always provided.
- It was not always clear where the Australian stock would be located in the facility.
- Pictures of the tissue culturing process and laboratories were not always provided.

Desktop review of sources of tissue culture free of media monitoring process

There is no formal process to monitor approved sources; however the quality of imports from approved sources is monitored at the border by DAFF as part of the inspection process. Any concerns over quality are referred to DAFF (Plant Quarantine Operations) in Canberra.

One review of the quality of approved sources imports has been undertaken by DAFF. The review was commenced after regional quarantine officers raised concerns with Plant

Quarantine Operations regarding the level of poor quality plant tissue cultures from a number of sources, including those approved to export tissue cultures to Australia that are free from media.

Plant Quarantine Operations undertook a review of all plant tissue culture free of media imported from offshore sources for the period January 2008 to December 2009. The review found that the imports from 20 approved sources had a contamination rate of greater than 5 percent. Plant Quarantine Operations sent letters to all of these sources, along with the importers who source their plants, and advised that action may be taken (such as revocation of media free certification) if the quality of tissue culture imports did not improve.

Plant Quarantine Operations is currently collecting data for a second round of performance analysis. Plant Quarantine Operations advises that the data will be reviewed in the coming months to determine if an improvement in quality has been observed or if further action is required.

Fieldwork (DAFF's Central East and South East Regions)

Review of inspection data related to approved sources of tissue culture

The Biosecurity Secretariat Auditor examined inspection data from the Central East Region office for the period 1 January 2010 to 4 February 2011.

Of the 35,113 tubs of tissue culture (totalling approximately 858,508 plants) sourced from approved sources of tissue culture free of media, approximately 10,840 of these tubs (30 percent) were found to be contaminated. The majority of these were destroyed, rather than be re-exported or grown out in a post-entry quarantine facility.

It should be noted that the high percentage of contaminations were due to four approved sources (48 percent, 34 percent, 34 percent and 37 percent contamination rates); the rest of the sources recorded low contamination rates (0.97 percent, 3.86 percent, 7.5 percent, 1.28 percent and 3.5 percent); while three approved sources recorded zero contaminations.

The Biosecurity Secretariat Auditor was unable to ascertain if all of the consignments from approved sources were in fact free of media. Either is possible, as import conditions for both are included in the same permit condition (PC0111).

These imports were sourced from 12 approved sources located in eight countries.

The Biosecurity Secretariat Auditor also examined inspection data from the South East Region office for the period 2 May 2010 to April 2011. It was difficult for the IIGB to ascertain the percentage level of contamination from the data, but it was clear that there was a high level of contaminated tissue culture from approved sources.

Tissue culture inspection process

The process for tissue culture inspection is as follows:

Entry management

- A Customs broker enters incoming cargo details into the Customs ICS system on behalf of the importer.
- Commodities entered by broker are linked to tariff codes embedded in cargo profiles.
- Tariff profiles identify commodities of quarantine concern.
- Commodities of quarantine concern are entered into DAFF's AIMS IT system.
- A DAFF Officer (general entry documentation area) checks documentation meets import permit conditions through AIMS.

Typical tissue culture free from growth media packaging

Inspection process (nursery stock unit)

- Nursery stock officers are trained to detect possible symptoms of plant disease.
- Training is undertaken on the job with documentary support (*Tissue Culture Manual: A Guide for AQIS Nursery Stock Officers June 2007*) compiled by the Operational Science Program.
- Importer completes a *Plant Arrival Notification* (Central East Region) form and sends (emails or fax) to nursery stock unit – this enables the nursery stock inspection unit to plan for upcoming consignments.
- The imported consignment is transferred from airport (majority of tissue culture arrives via air – if tissue culture arrives with a passenger it is intercepted at the border and ordered into quarantine at the airport) by the Customs broker or importer.
- Nursery stock unit officers assess documents against import conditions – including checking species against permitted species table in import permit.
- Nursery stock unit receives tissue culture and undertakes inspection of 100 percent of consignment.
- If nursery stock officer detects possible disease symptoms on the plantlets or contamination then a *PDI Interception* form is completed and submitted with samples of the tissue culture to Plant Pathologists in the Operational Science Program for identification of any bacteria or fungus.

- Nursery stock officer completes an *AQIS nursery stock inspection record* (Central East Region) or *Tissue culture inspection* (South Eastern Region) form – this includes a check of botanical names against the import permit.
- If no contamination then goods are released from quarantine and noted on AIMS.
- If contamination is present then the importer is given the option of quarantine treatment: destruction, re-export, or, in some circumstances, growth in a post entry quarantine facility – in most cases the importer chooses destruction of contaminated tissue cultures.
- Destruction is undertaken by a Quarantine Authorised Treatment Provider under a co-regulation agreement.
- Reporting spreadsheet filled in to record results (Sharepoint) – results reported to Plant Quarantine Operations monthly.

Central East Region Inspection Room

Audit interview with DAFF nursery stock inspection officers

The main issues that emerged from interviewing DAFF quarantine officers involved in the inspection of tissue cultures sourced from approved sources related to:

- Packing
    - Some approved sources pack too many plantlets in containers making inspection difficult.
    - Some approved sources pack plantlets into plastic bags – this can make plantlets more susceptible to physiological lesions that appear similar to the symptoms of bacterial infection.
    - Tissue culture free of media is often on paper tissue making it difficult to see both sides for a thorough examination.
- Contamination

    - Some approved sources consistently provide tissue culture planets that are of a low quality (almost 50% contamination).
    - Approved sources transferring cultures from growth media/containers to tubs/bags for travel may be cause of high contamination rates - a quarantine officer provided anecdotal evidence that at least one approved source had staff perform this task without gloves.
    - High contamination rate of some tissue culture may be as a result of the type of plant – e.g. kangaroo paw is sensitive but orchids are robust.
    - Importers often complain about quarantine officers handling cultures – some have claimed that this handling could be a cause of some of the contamination.
- Inspection
    - Cultures in media are much easier to inspect – easy to see roots.
    - Growth media assists in the identification of contamination – there is a risk with tissue culture free of media that contamination might be missed.

DAFF's Operational Science Program

The Operational Science Program (OSP) supports nursery stock inspection officers by providing training and decision support. OSP officers also determine whether or not the symptoms detected by nursery stock officers means the tissue cultures is contaminated and does not meet import conditions.

OSP is staffed with, among others, plant pathologists trained to detect and identify bacteria on plants and plant parts.

Audit interview with DAFF's OSP officers

The main issues that emerged from interviewing DAFF operational science officers related to:

- Packaging
    - Often too many cultures in tubs – difficult for inspector – risk that contamination is missed.
- Contamination
    - Plant pathologists often find bacterial ooze on tissue culture samples referred for testing by nursery stock inspection officers (this means tissue culture does not meet import conditions).
    - Contamination can be an indication of a problem within the production systems (non-sterile or aseptic conditions).
    - Importers often challenge that bacteria is not of quarantine concern.
    - OSP does not usually go the level of identifying the type of bacteria as presence of any bacteria means import does not meet conditions.
    - Bacteria on tissue culture presents a challenge to OSP – can't identify on the spot and don't know the risk.
- Inspection
    - Growth media, such as agar, supports detecting bacteria – tissue cultures free of media complicates detection.
    - Ex-media heightens risk of not seeing expression of disease.
    - DAFF nursery stock inspection officers are unable to identify different species when undertaking inspections – must rely on phytosanitary certificates and packing lists.

- Is not always clear when tissue culture is tissue culture – sometimes just trimmed down plants.
- Industry has raised concerns with the lack of training that DAFF nursery stock officers appear to have and the high turnover/rotation of officers in nursery stock inspection roles.

Review of import documentation related to imports sourced from approved sources of tissue culture free of media

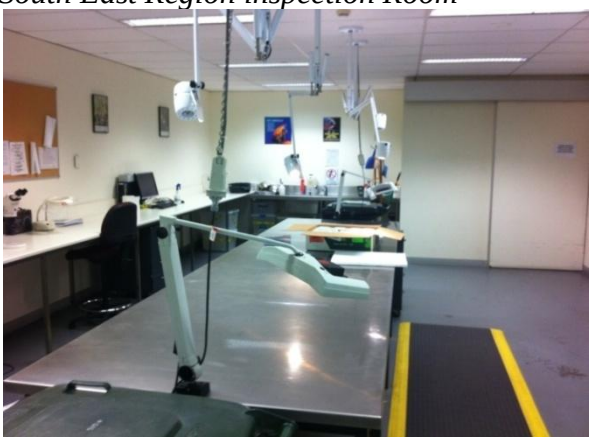
The Biosecurity Secretariat Auditor examined a sample of documentation relating to the import of tissue cultures sourced from approved sources.

The examination found that the majority of import conditions are met and are able to be verified by the DAFF document review process.

The examination found that the import condition most often not met is a condition contained in PC0111 'cultures inspected and found free from any bacterial or fungal infection, live insects, disease symptoms or other extraneous contamination of quarantine concern'. The major cause of failing to meet this condition is the detection of 'bacterial ooze' by OSP Plant Pathologists. Once bacteria is detected, no further testing to determine the type of bacteria is undertaken as presence of the bacteria is enough to indicate that import conditions have not been met.

In one case, a nursery stock inspection officer detected that the phytosanitary certificate dated 4 March 2011 that accompanied a consignment of ex-media tissue cultures from an approved source did not include the required declaration *prior to the removal of the plant tissue from media, the tissues cultures were inspected and found to be free of contamination. The plant tissue was aseptically transferred under supervision to sterile containers which were then sealed and not subsequently re-opened*. The importer was contacted and advised that the consignment was ordered into quarantine as it did not meet import conditions. The importer arranged for a new phytosanitary certificate from the NPPO of the host country of the approved source – this included the declaration and was dated 8 March 2011. A DAFF nursery stock inspection officer investigated the new documentation and found that it met import requirements. The consignment was released.

South East Region inspection Room



South East Region Operational Science Laboratory

IIGB audit findings

The inspection of tissue culture plantlets from approved sources free of media is a resource intensive task that provides challenges for DAFF nursery stock officers. It is unclear what quarantine risk is associated with these imports as, in a number of cases, the contamination is not identified.

The IIGB acknowledges that imported tissue cultures more than likely present a minimum risk of being infected with quarantine diseases. However it is clear from these findings that a number of approved sources are exporting a high percentage of contaminated tissue culture while it is not always clear what this contamination is and what biosecurity risk it poses.

Approved sources are required under import conditions to be sanitary and perform procedures relating to tissue culture under aseptic conditions. The high percentage of contaminations recorded by some approved sources indicate that there are issues with some in being able to meet DAFF's import requirements.

As the tissue cultures from these approved sources do not require a period of growing and disease screening in an Australian post-entry quarantine facility, there is essentially only one chance to detect quarantine diseases: the border inspection process undertaken by quarantine officers.

It is fundamentally important that the approval and monitoring of fixed place facilities that perform activities requiring specific infrastructure, such as laboratories, records the physical location and identifies persons responsible for operational management and ownership of the facility. It is also important that, as a condition of approval, the facility is required to notify DAFF promptly, preferably through its NPPO, if there are any changes to the ownership or use of the facility.

The IIGB believes that there are six key areas that can be strengthened to improve the management of current offshore schemes, namely:

- Documenting the biosecurity risk involved with tissue culture imports.
- Introducing an approval process that records the physical location of the approved sources facility and identifies the persons responsible for its operational management and ownership.
- Ensuring the provision and application of consistent guidance documentation for DAFF officers (e.g. in relation to work instructions, manuals, guidelines etc) involved in the management of offshore schemes, including the inspection and testing of commodities.
- Improving communication with stakeholders (particularly information provided to importers and offshore approved sources) on import conditions, including packaging requirements (i.e. before consignments are sent) to facilitate inspection (i.e. at the border by DAFF officers).
- Implementing formal monitoring and review processes for approved sources.
- Engaging the relevant NPPO regarding the performance of approved sources.

Recommendation 2

That DAFF considers undertaking periodic laboratory identification of any microbial contamination detected on tissue culture during the arrival inspection process to confirm the absence of biosecurity risks.

Recommendation 3

That DAFF reviews the approval process for sources free of media to ensure that it records the physical location of the approved sources facility and identifies the persons responsible for its operational management and ownership and includes relevant conditions of approval.

Recommendation 4

That DAFF, following review of the approval process, finalise and implement the draft work instruction for the approval of sources free of media – *Work Instruction for the tissue cultures free of media*.

Recommendation 5

That DAFF reviews the documentation that guides quarantine officers and Operational Science Program officers on the processes to follow when disease symptoms are detected at the border on tissue culture plantlets to ensure consistency across all regions.

Recommendation 6

That DAFF implements better communication on Australian import conditions to offshore approved sources.

Recommendation 7

That DAFF implements a formal monitoring and review process for approved overseas sources of nursery stock. This should include measurement against defined performance indicators and clearly outline measures that would be applied if an approved source fails to meet these indicators. The process should ensure that active approved sources have some form of review every two years. This recommendation should be considered across all current offshore sources approved by DAFF.

Recommendation 8

That DAFF considers advising, at certain intervals, the NPPO of the approved sources home country of performance against indicators[5]. This recommendation should be considered across all current offshore sources approved by DAFF.

[5] This should be considered within the context of International Standard for Phystosanitary Measures (ISPM) 13 - *Guidelines for the notification of non-compliance and emergency action.*

Case study – develop offshore schemes
Phalaenopsis nursery stock from Taiwan

Purpose of examining *Phalaenopsis* nursery stock from Taiwan

The IIGB examined *Phalaenopsis* nursery stock from Taiwan as it is an example of an offshore scheme that is being developed. The risk management measures for imports of *Phalaenopsis* orchids sourced from Taiwan include components that will be performed and certified by offshore third parties.

Background

In June 2006, Taiwan's Bureau of Animal and Plant Health Inspection and Quarantine (BAPHIQ) requested Australia review its import conditions for *Phalaenopsis* orchid nursery stock. The request was consistent with Article 4 (*Equivalence*) of the *Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement).

BAPHIQ proposed alternative measures that they considered were equally effective as Australia's measures in meeting Australia's ALOP.

Based on these measures, BAPHIQ requested *Phalaenopsis* nursery stock be exempt from:

- Three months post-entry quarantine in Australia.
- Mandatory insecticide dipping on arrival in Australia.

DAFF (Plant Biosecurity) undertook a review of policy for the importation of *Phalaenopsis* nursery stock from Taiwan with the following scope:

- Identification of biosecurity risks associated with *Phalaenopsis* nursery stock from Taiwan
- Evaluation of alternative measures which may be effective in meeting Australia ALOP.

DAFF finalised its review in August 2010 requiring the following mitigation measures to be in place for the importation of *Phalaenopsis* nursery stock from Taiwan:

- Tissue cultured plants, sourced from mother plants that have been tested and found free from identified pathogens, are transferred to quarantine standard production houses in Taiwan.
- Tissue cultured plants are grown in soil free media such as perlite, vermiculite, inorganic fibres or pasteurised sphagnum moss in BAPHIQ approved production houses for a minimum of four months.
- An insecticidal and fungicidal treatment is applied, prior to export of the nursery stock to Australia and phytosanitary inspection by BAPHIQ officers is conducted immediately prior to export.
- All *Phalaenopsis* nursery stock will be subject to inspection on arrival by DAFF officers. The detection of live insects, disease symptoms or regulated articles will result in the failure of the consignment, and remedial action.

The review is documented in the Biosecurity Australia publication: *Final Review of policy: Alternative risk management measures to import Phalaenopsis nursery stock from Taiwan August 2010*.

Audit and verification process as advised by DAFF Plant Quarantine

To ensure compliance with the proposed systems approach, DAFF (Plant Quarantine Operations) officers will audit the production system and BAPHIQ's accreditation scheme and conduct on arrival inspections of *Phalaenopsis* nursery stock to verify that Australia's quarantine requirements are met.

Work plan

Australia and Taiwan have developed a work plan – *Work Plan for the Importation of Phalaenopsis species orchids from Taiwan to Australia* - which outlines the mandatory operational requirements and the phytosanitary procedures to meet the requirements outlined in *Final Review of policy: Alternative risk management measures to import Phalaenopsis nursery stock from Taiwan August 2010.* The work plan outlines the responsibilities of each stakeholder.

The Work Plan states that DAFF have a responsibility to conduct audits and verification checks to ensure compliance with the Work Plan. A documented framework has not yet been developed. DAFF advise that it is proposed that they audit compliance against the work plan annually (as recommended in the Policy Review) and on an ad-hoc basis if required (for example, a high number of plants failing border inspection). These audits will involve examination and verification of BAPHIQ's documented system, as well physical inspections of approved greenhouses and grower's premises.

The Work Plan states that BAPHIQ's key responsibilities are: inspecting and verifying greenhouses that participate in the arrangements; adding new growers, exporters and facilities to the authorised list (and advise DAFF of any changes to the list); conducting monthly inspections of approved facilities and the plants with; advising growers of pest control procedures, inspection and testing of mother stock used to source tissue cultures; providing plant pest identification services as needed; supervise insecticidal and fungicidal treatment of plants prior to export; supervise the packing of the plants prior to export and conducting phytosanitary inspections and issuing phyosanitary certificates.

The Work Plan states that DAFF have a responsibility to conduct on-arrival inspection of imported consignments to verify freedom of pests and disease symptoms.

DAFF Work instructions

DAFF have not yet developed work instructions that apply to offshore activities, such as audit, or border activities, such arrival inspection, for *Phalaenopsis* species orchids from Taiwan.

Import permit conditions

DAFF have not yet finalised the import permit conditions for *Phalaenopsis* species orchids from Taiwan.

IIGB audit findings

Successfully developing an offshore scheme presents a number of challenges for DAFF. This audit found that one of the main challenges for DAFF is ensuring on an ongoing basis that activities undertaken by offshore third parties comply with the requirements of Australia's import conditions.

To ensure that the arrangements comply with Australia's import requirements, the program should ensure that all approved growers/greenhouses are regularly audited by DAFF officers. It should also include provision for the auditing of newly approved greenhouses and growers, as well as for ad-hoc audits. The audits should also ensure that BAPHIQ has a robust process in place for recording, approving and monitoring growers and greenhouses.

The program should be supported by appropriate audit tools, such as audit work-books and checklists, to ensure all the required elements are audited consistently across sites.

Given that these are new arrangements, it is imperative that an effective feedback loop between the border (inspections), the Operational Science Program and DAFF Plant Quarantine Operations (responsible for the arrangements) is in place. Data collected through this loop would help inform any future refinements or changes to the Work Plan and audit framework/schedule. It is important that the type of data that needs to be captured and recorded is considered at an early stage. The data could also be used to inform alternative arrangements for other imported commodities.

Recommendation 9

That DAFF implements an audit framework with a forward-looking audit schedule that is supported by appropriate audit tools.

Recommendation 10

That DAFF implements monitoring and feedback arrangements at the border inspection stage to measure the effectiveness of the alternative risk management measures implemented by Taiwan.

Recommendation 11

That DAFF considers the broader application of recommendations 9 and 10, should alternative arrangements be introduced in other countries and/or for other commodities.

Appendix A
Definitions

The biosecurity divisions of the Department of Agriculture, Fisheries and Forestry

The biosecurity divisions within the Department of Agriculture, Fisheries and Forestry are responsible for managing Australia's biosecurity system. They comprise:

- Biosecurity Plant
- Biosecurity Animal
- Biosecurity Food
- Biosecurity Quarantine Operations
- Biosecurity Regional and Business Services
- Biosecurity Strategic Projects

Biosecurity Services Group (BSG)

The Biosecurity Services Group was comprised of a number of divisions within the Department of Agriculture, Fisheries and Forestry. It was formed on 1 July 2009 and integrated the functions of the Australian Quarantine and Inspection Service; Biosecurity Australia; the biosecurity parts of Product Integrity, Animal and Plant Health division; and the Quarantine and Biosecurity Policy Unit.

BSG became known as the biosecurity divisions of the Department of Agriculture, Fisheries and Forestry during 2011.

Plant Biosecurity Branch

Plant Biosecurity is a branch within the Biosecurity Plant Division of DAFF that provides, among other things, science-based assessments and advice on existing import conditions. Also referred to as Biosecurity Australia.

Plant Quarantine Operations Branch

Plant Quarantine Operations is a branch within the Biosecurity Plant Division that is responsible for assessing the quarantine risks and processing applications to import plants and live plant materials. Also referred to as the Australian Quarantine Inspection Service (AQIS).

AQIS

The Australian Quarantine Inspection Service is part of DAFF and operates across a number of the department’s biosecurity divisions. AQIS manages quarantine controls at our borders to minimise the risk of exotic pests and diseases entering the country. AQIS also provides import and export inspection and certification to help retain Australia's highly favourable animal, plant and human health status and wide access to overseas export markets.

DAFF biosecurity officer

An officer employed within one of DAFF's biosecurity divisions – includes quarantine officers.

Quarantine officer

A quarantine officer is an officer of DAFF appointed under the *Quarantine Act 1908*. A quarantine officer has legislated and delegated functions and/or powers relating to quarantine – for example, a quarantine officer has the power to require a person to provide additional information about goods imported into Australia.

Nursery stock

Nursery Stock is defined as all propagative plant material, other than seeds, imported for purposes of propagation.

It may include:

- Budwood
- Bulbils
- Bulbs
- Corms
- Cuttings
- Grafting wood
- Leaves
- Pips
- Plants
- Rhizomes
- Roots
- Seedlings
- Slips
- Stems
- Tissue cultures
- Tubers

and any other tissue imported for purposes of propagation.

It does not include propagative plant material imported for purposes other than propagation.

Pest and/or disease

Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products.[6]

Exotic pests are those not currently present in Australia. *Endemic* pests are established within Australia.

[6] International Plant Protection Convention

Biosecurity risk

Potential harm to the economy, environment, and human health from the negative impacts associated with the entry, establishment or spread of exotic pests (including weeds) and diseases. For example; damage to Australian forest or grassland ecosystems, grain and horticultural crops and to home and community gardens as a result of the entry and establishment of the exotic plant disease Sudden Oak Death.

Also referred to as quarantine risk.

Risk management measure

A measure that, if implemented, could reduce the level of biosecurity risk associated with a pest or disease. For example; restricting the entry of bare rooted plants known to be carriers of the plant disease Sudden Oak Death from countries where that disease is known to occur is a risk management measure to prevent its entry and establishment in Australia.

Also referred to as quarantine measure.

Offshore (also known as pre-border)

Activities and arrangements that seek to prevent biosecurity risks reaching Australia's border.

Appropriate level of protection (ALOP)

The level of protection deemed appropriate by a country establishing a sanitary (human and animal health) or phytosanitary (plant health) measure to protect human, animal or plant life or health within its territory – also known as the acceptable level of risk.

Australia's ALOP is currently expressed as providing a high level of sanitary and phytosanitary protection, aimed at reducing risk to a very low level, but not to zero.

Risk analysis

Assessment of the level of biosecurity risk associated with the importation, or proposed importation of animals, plants or goods and, if necessary, identification of risk management options to limit the level of risk to achieve Australia's appropriate level of protection.

Import risk analysis (IRA)

A type of risk analysis with key steps regulated under the *Quarantine Regulations 2000*. The Executive Manager of DAFF's Plant Division (Biosecurity Australia's Chief Executive) determines if a risk analysis will be conducted as an import risk analysis based on criteria outlined in the *Import Risk Analysis Handbook 2007 (update 2009)*. A risk analysis which does not meet these criteria will be undertaken as a non-regulated analysis of existing policy.

Non-regulated analysis

A risk analysis conducted as a non-regulated analysis of relevant existing policy.

Also known as a policy and/or scientific review, or a pest risk analysis.

Appendix B
Reference material

- Pest and Disease Image Library (PaDIL) - Plant Biosecurity Toolbox Diagnostic Methods for Sudden Oak Death *Phytophthora ramorum*
- National Nursery and Garden Industry Biosecurity Plan 2008
- AQIS Import conditions database (ICON)
- DAFF Agriculture at a glance 2010
- Victoria Dept Primary Industry Biosecurity Strategy for Victoria