

Analysis of submissions on draft import health schedule for nursery stock of *Persea* (Released for consultation on 6 September 2004)

Ninety-three submissions were received regarding the draft import health schedules. These were submitted by:

1. Form letter (88 submissions from New Zealand Avocado Growers' Association members)
2. Mr J Blackwood
3. Far North Avocado Management Ltd
4. Mangawhai Estates
5. New Zealand Avocado Nursery Association
6. New Zealand Avocado Growers' Association and Avocado Industry Council Ltd

This documents records the issues raised in the submissions and how these have been addressed by the Ministry of Agriculture and Forestry Biosecurity New Zealand (Biosecurity New Zealand). Comments from submitters are reproduced in **bold text** and the responses are recorded in normal text.

Form letter

A copy of the following letter was received from 88 members of the New Zealand Avocado Growers' Association:

I would like to take the opportunity to comment on the draft standard – import of Nursery Stock – Persea.

As a member of the Avocado Growers' Association I fully support the arguments put forward by the Avocado Growers' Association (AGA) and the Avocado Industry Council (AIC) with respect to maintaining ASBV free status, removal of avocado cryptic virus 3 and allowing tissue culture media to contain charcoal. I also support the request that the MAF Biosecurity Authority allow Persea budwood and tissue culture imports to be cleared through a level 2 quarantine facility.

Considerable effort has been put in by my elected AGA representatives to work closely with the NZ Avocado Nurserymen Association and the Avocado Industry Council. I applaud the efforts being made to strive for the production of high quality trees by the NZANA members. Unfortunately it has not been possible to import new avocado germplasm into New Zealand for some time as the material needs to be placed into a level 3 quarantine facility.

I am concerned that my business and the avocado industry is losing international competitiveness by being denied access to new and exciting avocado cultivars that are more phytophthora tolerant through the need to be placed into a level 3 quarantine facility. In addition market access into our important export markets could be harmed with the import standard as proposed. Having studied the draft import standard and agreed with the changes proposed by the AGA/AIC I would suggest that importation of new avocado budwood and tissue culture material can be successfully managed through a level 3 quarantine facility without much risk to the avocado industry.

Thank you for the opportunity to comment on the proposed import standard.

Biosecurity New Zealand thanks the members of the New Zealand Avocado Growers' Association for their comments made during consultation on the proposed revisions to the *Persea* import health standard. We have considered your comments as follows:

1. *Avocado sunblotch viroid (ASBVd)*

Biosecurity New Zealand has very carefully considered the points raised by your association, in particular the new evidence you have presented, and has discussed these issues with Dr R Harding (Queensland University of Technology (QUT), Australia) and the MAF National Plant Pest Reference Laboratory (NPPRL). Further details of this consideration are set out below but we have concluded that ASBVd was recorded in New Zealand in 1999 and as part of our international obligations we must recognise this when setting New Zealand's import requirements. However, having said that it is clear that ASBVd is not widespread and New Zealand remains free from the most severe strains of the viroid. Therefore, as proposed in the draft standard, Biosecurity New Zealand will keep all strains of ASBVd as regulated unless it can be proved, on the basis of their biological and molecular characteristics, that the same strain is present in New Zealand.

Biosecurity New Zealand considers that the survey results obtained in 1999 which identified the presence of ASBVd in New Zealand are reliable. The QUT laboratory identified the viroid using specific primers in RT-PCR, southern blotting and sequencing. Of the 21 sequences obtained, 14 were identical and the remaining 7 were similar but had 1-2 nucleotide substitutions in different locations. However, contrary to your submission, Dr Harding has confirmed that none of these sequences were identical to the SB-1 isolate used as a positive control during the tests. The results obtained by QUT were also confirmed by independent testing using RT-PCR and southern blotting in NPPRL.

We do recognise that inconsistent results have been obtained during ASBVd testing by the QUT laboratory and that one possible explanation might have been cross-contamination of mortars and pestles. However, this was not demonstrated to have occurred and Dr Harding has pointed out that there are a number of alternative explanations which might have affected the testing including the low concentration and erratic distribution of the viroid and the presence of inhibitory substances in the samples. Therefore, bearing in mind the previous evidence we do not consider this observation reason enough to disregard the results.

Because of the low concentration and erratic distribution of the viroid, Biosecurity New Zealand has concluded that imported nursery stock should be tested twice for ASBVd during post-entry quarantine.

2. *Avocado cryptic virus 3*

An assessment of the risk posed by this virus was provided when the draft import health standard for *Persea* was distributed for consultation. Although the virus is not known to cause significant economic damage to avocado, Biosecurity New Zealand considers that it is prudent to keep the virus as a regulated pest at this time. We also consider that the proposed measures, sourcing the material from areas free of the virus and inspection in post-entry quarantine, are commensurate with the risk posed by the virus.

3. *Tissue culture media – charcoal*

In general Biosecurity New Zealand prefers tissue culture media not to contain charcoal so that vials may be more easily inspected at the border. However, this requirement will be removed since the tissue culture plants are required to be imported into post-entry quarantine for 12 months. Biosecurity New Zealand intends to review the requirements for charcoal in the media of all imported tissue culture in the future.

4. Post-entry quarantine

Biosecurity New Zealand has carefully considered your request to import material into a lower level of post-entry quarantine. However, it has been concluded that a Level 3 post-entry quarantine facility is necessary to ensure the health of the plants imported into New Zealand.

One of the principal difference between Level 2 and Level 3 post-entry quarantine facilities is in their operation. Level 3 facilities are required to have a quality management system which ensures that the phytosanitary status of the quarantined plants is established and maintained prior to the material being released into New Zealand. This management system covers such areas as maintenance of hygiene during pruning and handling (of particular importance in avocado which may be infected with the mechanically transmissible ASBVd), and labelling and maintenance of records to track which plants have been tested and/or treated. Level 3 facilities are also operated by scientists with specific technical knowledge of the exotic diseases which may be associated with the imported crop. Biosecurity New Zealand considers that bearing in mind the importance of the avocado industry and the inspection, testing and treatment requirements, imported nursery stock should undergo post-entry quarantine in a Level 3 facility.

Biosecurity New Zealand has also recently approved Riversun Nursery Limited as a Level 3 post-entry quarantine facility for the importation of avocado nursery stock.

Mr J Blackwood

I am writing to support the cause brought to your attention by my representatives from the Avocado Growers Association and the Avocado Industry Council to allow *Persea* budwood and tissue culture imports to be cleared through a level 2 quarantine facility.

Our orchard struggles with phytophthora and we feel that it is critical we are allowed access to the more resistant strains of trees our industry wishes to trial.

I trust you will give this matter your urgent attention and appreciate the genuiness of our appeal.

Biosecurity New Zealand thanks Mr Blackwood for his comments made during consultation on the proposed revisions to the *Persea* import health standard. We have carefully considered your request to import material into a lower level of post-entry quarantine. However, it has been concluded that a Level 3 post-entry quarantine facility is necessary to ensure the health of the plants imported into New Zealand.

One of the principal difference between Level 2 and Level 3 post-entry quarantine facilities is in their operation. Level 3 facilities are required to have a quality management system which ensures that the phytosanitary status of the quarantined plants is established and maintained prior to the material being released into New Zealand. This management system covers such areas as maintenance of hygiene during pruning and handling (of particular importance in avocado which may be infected with the mechanically transmissible ASBVd), and labelling and maintenance of records to track which plants have been tested and/or treated. Level 3 facilities are also operated by scientists with specific technical knowledge of the exotic diseases which may be associated with the imported crop. Biosecurity New Zealand considers that bearing in mind the importance of the avocado industry and the inspection, testing and treatment requirements, imported nursery stock should undergo post-entry quarantine in a Level 3 facility.

Biosecurity New Zealand has also recently approved Riversun Nursery Limited as a Level 3 post-entry quarantine facility for the importation of avocado nursery stock.

Far North Avocado Management Ltd

We are avocado growers from the Far North and have been growing avocados for over 20 years. We own and manage over 120 ha of orchards and are planning to develop a further 100 ha.

We urgently need progress on the importation of avocado plant material to begin this development and to remain competitive in the global market.

Our submission is in support of the New Zealand Avocado Growers Association, submission to the Ministry of Agriculture and Forestry, with respect to maintaining ASBV free status, removal of avocado cryptic virus 3 and allowing tissue culture media to contain charcoal. We also support the request that the MAF Biosecurity Authority allow *Persea* bud wood and tissue culture imports to be cleared through a level 2 quarantine facility.

Our request for these changes to the draft standard is based on the following points.

- **ASBV**

The extensive and on going testing for ASBV carried out by the New Zealand Avocado Industry over the last 3 years, has found no evidence of the virus or any of its strains in NZ avocados. The tests carried out by Rob Harding at the QUT laboratory in 1999 have been found to be flawed and the results should be set aside.

- **Tissue culture media**

Charcoal is used in all avocado tissue culture. If it is a requirement that tissue culture media is charcoal free then the Avocado industry is literally being denied access to any further improvements into its breeding program. We note that charcoal is used as a media for other imported tissue culture plant material.

- **Avocado cryptic virus**

To our knowledge this virus has never posed a risk to international avocado production.

- **PEQ level 3 facility**

Under 3.1(ii) of the draft when a phytosanitary certificate is issued the plant material is deemed to be free of visually detectable pests and deemed to be sourced from a pest free place of production. We believe that a phytosanitary certificate (declaring that these requirements have been met) issued by the NPPO of the exporting country should be sufficient to allow plant material to be held in a level 2 facility in New Zealand. We cannot understand the requirement nor see the need for further testing in a level 3 facility.

Lastly we are concerned that our business and the avocado industry is losing international competitiveness by being denied access to new avocado cultivars through the need for imported material to be placed into a level 3 quarantine facility. In addition market access into our important export markets could be harmed with the import standard as proposed regarding ASBV. Having studied the draft import standard and agreed with the changes proposed by the Avocado Growers Association we would suggest that importation of avocado plant material can be successfully managed through a level 2 quarantine facility without the risk to the avocado industry that a level 3 facility implies.

Biosecurity New Zealand thanks Far North Avocado Management for their comments made during consultation on the proposed revisions to the *Persea* import health standard. We have considered your comments as follows:

1. *Avocado sunblotch viroid (ASBVd)*

Biosecurity New Zealand has very carefully considered the points raised by your association, in particular the new evidence you have presented, and has discussed these issues with Dr R Harding (Queensland University of Technology (QUT), Australia) and the MAF National Plant Pest Reference Laboratory (NPPRL). Further details of this consideration are set out below but we have concluded that ASBVd was recorded in New Zealand in 1999 and as part of our international obligations we must recognise this when setting New Zealand's import requirements. However, having said that it is clear that ASBVd is not widespread and New Zealand remains free from the most severe strains of the viroid. Therefore, as proposed in the draft standard, Biosecurity New Zealand will keep all strains of ASBVd as regulated unless it can be proved, on the basis of their biological and molecular characteristics, that the same strain is present in New Zealand.

Biosecurity New Zealand considers that the survey results obtained in 1999 which identified the presence of ASBVd in New Zealand are reliable. The QUT laboratory identified the viroid using specific primers in RT-PCR, southern blotting and sequencing. Of the 21 sequences obtained, 14 were identical and the remaining 7 were similar but had 1-2 nucleotide substitutions in different locations. However, contrary to your submission, Dr Harding has confirmed that none of these sequences were identical to the SB-1 isolate used as a positive control during the tests. The results obtained by QUT were also confirmed by independent testing using RT-PCR and southern blotting in NPPRL.

We do recognise that inconsistent results have been obtained during ASBVd testing by the QUT laboratory and that one possible explanation might have been cross-contamination of mortars and pestles. However, this was not demonstrated to have occurred and Dr Harding has pointed out that there are a number of alternative explanations which might have affected the testing including the low concentration and erratic distribution of the viroid and the presence of inhibitory substances in the samples. Therefore, bearing in mind the previous evidence we do not consider this observation reason enough to disregard the results.

Biosecurity New Zealand requires specific testing for ASBVd in post-entry quarantine because the viroid does not always give clear symptoms which can be used to categorically identify the disease. Because of the low concentration and erratic distribution of the viroid, it has been concluded that imported nursery stock should be tested twice for ASBVd during post-entry quarantine.

2. *Avocado cryptic virus 3*

An assessment of the risk posed by this virus was provided when the draft import health standard for *Persea* was distributed for consultation. Although the virus is not known to cause significant economic damage to avocado, Biosecurity New Zealand considers that it is prudent to keep the virus as a regulated pest at this time. We also consider that the proposed measures, sourcing the material from areas free of the virus and inspection in post-entry quarantine, are commensurate with the risk posed by the virus.

3. Tissue culture media – charcoal

In general Biosecurity New Zealand prefers tissue culture media not to contain charcoal so that vials may be more easily inspected at the border. However, this requirement will be removed since the tissue culture plants are required to be imported into post-entry quarantine for 12 months. Biosecurity New Zealand intends to review the requirements for charcoal in the media of all imported tissue culture in the future.

4. Post-entry quarantine

Biosecurity New Zealand has carefully considered your request to import material into a lower level of post-entry quarantine. However, it has been concluded that a Level 3 post-entry quarantine facility is necessary to ensure the health of the plants imported into New Zealand.

One of the principal difference between Level 2 and Level 3 post-entry quarantine facilities is in their operation. Level 3 facilities are required to have a quality management system which ensures that the phytosanitary status of the quarantined plants is established and maintained prior to the material being released into New Zealand. This management system covers such areas as maintenance of hygiene during pruning and handling (of particular importance in avocado which may be infected with the mechanically transmissible ASBVd), and labelling and maintenance of records to track which plants have been tested and/or treated. Level 3 facilities are also operated by scientists with specific technical knowledge of the exotic diseases which may be associated with the imported crop. Biosecurity New Zealand considers that bearing in mind the importance of the avocado industry and the inspection, testing and treatment requirements, imported nursery stock should undergo post-entry quarantine in a Level 3 facility.

Biosecurity New Zealand has also recently approved Riversun Nursery Limited as a Level 3 post-entry quarantine facility for the importation of avocado nursery stock.

Mangawhai Estates

There would seem to be little purpose in providing complex spreadsheets of risk analysis when the draft policy continues to require material to go to a level 3 facility. There is none available to avocado growers. Accordingly, there will be no imports.

There is no extensive justification for the level 3 requirement. Surely that is an imperative. If you can establish that nothing less will do, in a scientific sense, then growers will have to accept that. There is no indication that you recognise that obligation.

The situation is serious for this partnership because we have been in the industry for over 20 years. We currently produce around 8000 tray equivalents including Reed. Our trees are tired and injections no longer revive them. We are in the course of replanting. Some of that will be Thomas, some local nursery stock, some by top grafting our own Reed and Zutano stock. But none of it will be on Merensky because you will not allow it in. The cost of this in production terms is incalculable. Even if we were to persuade you to change this aspect it will still be 5 years before the results will bear any fruit.

The industry scientists will provide a more reasoned commentary on other aspects of the draft. But it will all be waste of time if you do not allow material to even get to the border.

Biosecurity New Zealand thanks Mangawhai Estates for their comments made during consultation on the proposed revisions to the *Persea* import health standard. We have carefully considered your request to import material into a lower level of post-entry quarantine. However, it has been concluded that a Level 3 post-entry quarantine facility is necessary to ensure the health of the plants imported into New Zealand.

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New Zealand Avocado Nursery Association

The NZ Avocado Nursery Association (NZANA) represents 18 avocado nurseries that produce an estimated 98% of the total NZ commercial avocado plantings per annum. NZANA policy is to fully support sound scientifically based importation requirements. We thank you for this opportunity to comment on the draft import health standard of Nursery Stock – *Persea*.

The NZANA, Avocado Growers Association and the Avocado Industry Council have a close working relationship and a commitment to strive for optimum tree quality and its nursery members are participating in the Avocado Plant Improvement Scheme on a voluntary basis. The draft import health standard was consequently circulated to the NZANA Executive Committee for comment and discussion.

Having studied the Draft Import Standard, the NZANA fully supports the arguments put forward by the Avocado Growers Association (AGA) and the Avocado Industry Council (AIC) with respect to maintaining ASBV free status, removal of avocado cryptic virus 3 and allowing tissue culture media to contain charcoal. The NZANA also respectfully requests that the MAF Biosecurity Authority allow *Persea* budwood and tissue culture imports to be cleared via a level 2 quarantine facility.

Our request for change to the import health standard is based on the following points:

- **Reduced international competitiveness of the NZ avocado industry.**
Plant improvement is a long-term undertaking by nature, but is vital to the health and productivity of any horticultural industry. From time to time, superior selections are discovered or selected in other parts of the world, such as Merensky 2 or ‘Dusa’ from South Africa – an avocado rootstock tested in several countries and demonstrated to have superior production qualities than practically all other known rootstocks to date.

There are other selections available from California and elsewhere that would definitely be of benefit to the NZ Avocado industry in our opinion. To illustrate a point, allow us to highlight ‘Dusa’ as an example:

The South African patent holders of Dusa (Merensky Technological Services Pty Ltd) agreed to allow the release of Dusa into NZ under AIC control, in mid 2001. Since then, the reason that this rootstock (and other stocks and cultivars) has not been available for propagation by the nurseries, has been a lack of a level 3 quarantine facility. Dusa is already commercially available to growers in South Africa, California and Australia.

- **A demand to meet market demands for superior genetic material.**
Because research results travel the world fast, NZ avocado growers are aware of the merits of new rootstock cultivars and are repeatedly enquiring from nurseries about its availability. They are also aware of the incredible situation whereby a horticultural industry is denied the opportunity to progress and remain competitive for lack of suitable quarantine facilities.

- **We see the import standard as an integral part of the NZANA high health scheme currently under design to ensure that avocado trees propagated in NZ remain free from known pests. NZANA members are voluntarily testing their propagating source material for ASBV on an ongoing basis, the results of this testing form part of the technical basis for the AGA/AIC submission.**
- **As responsible businesses the NZANA see an appropriate import standard as important to supporting international plant variety rights (PVR) programmes. The AGA/AIC have negotiated advantageous PVR agreements with the overseas plant breeders. The organisations holding the PVR for avocado material we believe can readily meet MAF requirements for level 2 quarantine.**

We trust the points we have raised will be helpful in your deliberations on the import standard for Persea.

Biosecurity New Zealand thanks the New Zealand Avocado Growers' Association and Avocado Industry Council Ltd for their comments made during consultation on the proposed revisions to the *Persea* import health standard. We have considered your comments as follows:

1. *Avocado sunblotch viroid (ASBVd)*

Biosecurity New Zealand has very carefully considered the points raised by your association, in particular the new evidence you have presented, and has discussed these issues with Dr R Harding (Queensland University of Technology (QUT), Australia) and the MAF National Plant Pest Reference Laboratory (NPPRL). Further details of this consideration are set out below but we have concluded that ASBVd was recorded in New Zealand in 1999 and as part of our international obligations we must recognise this when setting New Zealand's import requirements. However, having said that it is clear that ASBVd is not widespread and New Zealand remains free from the most severe strains of the viroid. Therefore, as proposed in the draft standard, Biosecurity New Zealand will keep all strains of ASBVd as regulated unless it can be proved, on the basis of their biological and molecular characteristics, that the same strain is present in New Zealand.

Biosecurity New Zealand considers that the survey results obtained in 1999 which identified the presence of ASBVd in New Zealand are reliable. The QUT laboratory identified the viroid using specific primers in RT-PCR, southern blotting and sequencing. Of the 21 sequences obtained, 14 were identical and the remaining 7 were similar but had 1-2 nucleotide substitutions in different locations. However, contrary to your submission, Dr Harding has confirmed that none of these sequences were identical to the SB-1 isolate used as a positive control during the tests. The results obtained by QUT were also confirmed by independent testing using RT-PCR and southern blotting in NPPRL.

We do recognise that inconsistent results have been obtained during ASBVd testing by the QUT laboratory and that one possible explanation might have been cross-contamination of mortars and pestles. However, this was not demonstrated to have occurred and Dr Harding has pointed out that there are a number of alternative explanations which might have affected the testing including the low concentration and erratic distribution of the viroid and the presence of inhibitory substances in the samples. Therefore, bearing in mind the previous evidence we do not consider this observation reason enough to disregard the results.

Because of the low concentration and erratic distribution of the viroid, Biosecurity New Zealand has concluded that imported nursery stock should be tested twice for ASBVd during post-entry quarantine.

2. *Avocado cryptic virus 3*

An assessment of the risk posed by this virus was provided when the draft import health standard for *Persea* was distributed for consultation. Although the virus is not known to cause significant economic damage to avocado, Biosecurity New Zealand considers that it is prudent to keep the virus as a regulated pest at this time. We also consider that the proposed measures, sourcing the material from areas free of the virus and inspection in post-entry quarantine, are commensurate with the risk posed by the virus.

3. Tissue culture media – charcoal

In general Biosecurity New Zealand prefers tissue culture media not to contain charcoal so that vials may be more easily inspected at the border. However, this requirement will be removed since the tissue culture plants are required to be imported into post-entry quarantine for 12 months. Biosecurity New Zealand intends to review the requirements for charcoal in the media of all imported tissue culture in the future.

4. Post-entry quarantine

Biosecurity New Zealand has carefully considered your request to import material into a lower level of post-entry quarantine. However, it has been concluded that a Level 3 post-entry quarantine facility is necessary to ensure the health of the plants imported into New Zealand.

One of the principal difference between Level 2 and Level 3 post-entry quarantine facilities is in their operation. Level 3 facilities are required to have a quality management system which ensures that the phytosanitary status of the quarantined plants is established and maintained prior to the material being released into New Zealand. This management system covers such areas as maintenance of hygiene during pruning and handling (of particular importance in avocado which may be infected with the mechanically transmissible ASBVd), and labelling and maintenance of records to track which plants have been tested and/or treated. Level 3 facilities are also operated by scientists with specific technical knowledge of the exotic diseases which may be associated with the imported crop. Biosecurity New Zealand considers that bearing in mind the importance of the avocado industry and the inspection, testing and treatment requirements, imported nursery stock should undergo post-entry quarantine in a Level 3 facility.

Biosecurity New Zealand has also recently approved Riversun Nursery Limited as a Level 3 post-entry quarantine facility for the importation of avocado nursery stock.

New Zealand Avocado Growers' Association and Avocado Industry Council Ltd

Thank you for the opportunity to make a submission on the draft (proposed) import standard for nursery stock of *Persea* (avocado). After studying the proposal and analysing the implications on the New Zealand avocado sector we request that MAF consider the changes proposed in our submission carefully prior to introducing the proposed standard.

1. Avocado sun blotch viroid (ASBV)

The standard is largely silent on ASBV. We request that MAF reconsider this in view of more recent information that we have accumulated and can make available to MAF. It is the AGA and AIC view that ASBV is not present in New Zealand. We make the claim on the following grounds:

- To date fresh leaf samples from 418 trees have been tested for ASBV as part of the NZ Avocado Nursery Association ASBV testing scheme. No ASBV has been detected in any sample. The testing has been conducted by Dr Barry Manicom at the Institute for Tropical and Subtropical Crops in Nelspruit, South Africa using Dot blot and RT-PCR in parallel on the same sample. Dr Manicom's laboratory is contracted by the South African Avocado Growers Association to conduct all the ASBV tests for their industry-wide *ASBV-free new tree* programme. This laboratory uses the same primers as Hafner from Australia.
- The earlier ASBV "positive" tests reported by MAF using the laboratory of Dr Rob Harding, Queensland University of Technology (QUT) are viewed as unreliable due to inconsistent results in testing conducted at QUT by the New Zealand avocado industry. New Zealand nurseries using the QUT laboratory rapidly lost confidence when bulked samples from five trees tested positive that when submitted as individual trees samples each sample tested negative. Furthermore, despite other individual trees testing positive in initial testing, repeated testing of these trees at QUT, in some cases individual trees were repeatedly sampled more than 10 times, failed to return a positive result. The inconsistency in results was traced by Dr Harding back to a problem with contamination of the mortar and pestles being used to prepare leaf samples for analysis. As a result of the inconsistency of testing Dr Harding and QUT withdrew their ASBV testing services despite the New Zealand avocado industry's desire to continue working with QUT.
- The Australian avocado industry has ceased to use QUT for ASBV testing due to similar inconsistent results in their own testing programme and is developing new testing capability using Queensland Department of Primary Industries staff and facilities.
- The sequence of ASBV detected in samples from New Zealand was identical to the positive control used in the QUT laboratory. Based on the instability of the viroid sequence when replicating in a host and that there has been only one importation of material from the cultivar "Velvick" from Australia (uncertain when but believe it to be in the early 1980's) that we are aware of, we concluded that contamination of samples had occurred in the laboratory. A suspicion that was confirmed by Dr Harding. Such results suggest that the survey results of 1999 should be set aside on the grounds of the new information and in recognition of the problems associated with quality control systems at the QUT laboratory and a new survey undertaken to utilise the better technology and methodology available today.

- **Material from the cultivar ‘Zentmeyer’ imported from California when tested while in quarantine in New Zealand by the QUT laboratory delivered a positive test. After notification of this result the parent plant (from which the bud wood was sourced) was re-tested by Dr Allan Dodds at the University of California, Riverside. The result was negative and the Californians have since declared the mother tree free of ASBV. The material sent to New Zealand was unfortunately destroyed so cannot be re-tested.**

It is our contention that the ASBV freedom status of New Zealand should be maintained and that the import standard reflect this position. Our argument revolves around the following points:

- **100% negative results from the extensive testing by ITSC in South Africa**
- **QUT admitted flawed quality control in lab protocol led to inconsistent results**
- **QUT unilaterally withdrew ASBV testing services despite being asked not to**
- **The Australian industry no longer use QUT as they consider them unreliable**
- **ASBV sequence found at QUT was the same as the positive controls used, a lack of variants suggests no replication has been happening therefore the sequence is a result of contamination.**

2. Avocado cryptic virus 3

We are surprised to see avocado cryptic virus 3 on the proposed import standard. The virus has no identifiable symptoms and is not listed as a problem in the only scientific paper that we have been able to find. To be included in the proposed import standard a risk assessment outlining why the need to include it and what risk, if any, is actually posed to industry is required. We also note that there is no test available for the presence of avocado cryptic virus 3.

We request that avocado cryptic virus 3 be removed from the proposed import standard but to maintained a watching brief on the scientific literature for the negative effects of avocado cryptic virus 3 infection in avocado trees.

3. Tissue culture media – charcoal

We request information on the scientific basis of the risk associated with the tissue culture media containing charcoal. We would like to note that all media used for tissue of avocados uses charcoal to absorb phenolic compounds that would otherwise prevent the formation of healthy plants.

On the assumption that there is no risk from having charcoal in the tissue culture media we request that charcoal be allowed in tissue culture media in the import standard.

4. Post entry quarantine

In the proposed import standard there is a requirement that all imported nursery stock must be put into a level 3 quarantine facility. We would like to understand better why this requirement is necessary and what risk analysis this is based on. In reviewing the inspection, testing and treatment requirements in the import standard for Persea we note the following:

- **ASBV testing requirements. Through a thorough survey of the scientific literature and personal contact with researchers active in ASBV research we understand that ASBV can only be spread mechanically (commonly by grafting tools) or in pollen (although this does not spread the ASBV to the whole plant). Avocado plants in**

quarantine do not flower so cannot be contaminated by pollen from other avocado plants eliminating the risk from pollen. The disease has no known vector. The principal reason for containment of avocado plants in quarantine has been to gather enough material for ASBV testing. Given the low risk of ASBV infected plant material spreading ASBV we suggest that a level 2 quarantine facility would be suitable to meet an import health standard.

- Despite testing 418 samples in South Africa we have not had a positive result for ASBV. Also given that the positive test results from QUT in Australia appear to be from contamination by the positive control on laboratory equipment we do not know what strains of ASBV may be present in New Zealand. We would like to request a list of sequences of ASBV strains that are considered to be present in New Zealand and a reference to where these strains are reported. This information would strengthen the avocado industry testing programme and is required for the import standard. We respectfully submit that a laboratory anywhere in the world cannot test for ASBV variants not detected in New Zealand without knowing what specific ASBV variants are considered to be present in New Zealand.
- Insects and Mites. The requirements for visual inspections and chemical treatment can easily and safely be carried out in a level 2 quarantine facility.

We view the risk to the avocado industry and to New Zealand's phytosanitary requirements as very low. We therefore request that MAF reduce the requirement for level 3 quarantine facility to a level 2 quarantine facility for avocado material as described in the import standard taking into consideration the offshore treatment requirements, the freedom of disease declarations and the low transmission risk of all the identified pests. We also request that MAF Biosecurity supply seasonal cause based scientific risk analysis for the requirement for level 3 quarantine requirements.

Pest List

We also note that there are important avocado pests which we think should be on the pest list as restricted organisms. In particular, we are concerned that avocado thrips is missing from the list. It is a devastating pest in California. Cercospora spot is listed as a non restricted pest but we understand that it has never been recorded on New Zealand avocados. We would consider that both avocado thrips and Cercospora spot are quarantine pests and if they become established in New Zealand they will have very serious market access implications for New Zealand avocado growers.

The New Zealand Avocado Growers' Association fully supports comprehensive and scientifically justified importation requirements. In the proposed import standard we are not convinced that such a high level of quarantine is required. We are keen to see this consultation process continue on the basis of sound scientific rationale and look forward to your response.

Thank you for the opportunity to comment on the proposed import standard.

Biosecurity New Zealand thanks the New Zealand Avocado Nursery Association for their comments made during consultation on the proposed revisions to the *Persea* import health standard. We have considered your comments as follows:

1. *Avocado sunblotch viroid (ASBVd)*

Biosecurity New Zealand has very carefully considered the points raised by your association, in particular the new evidence you have presented, and has discussed these issues with Dr R Harding (Queensland University of Technology (QUT), Australia) and the MAF National Plant Pest Reference Laboratory (NPPRL). Further details of this consideration are set out below but we have concluded that ASBVd was recorded in New Zealand in 1999 and as part of our international obligations we must recognise this when setting New Zealand's import requirements. However, having said that it is clear that ASBVd is not widespread and New Zealand remains free from the most severe strains of the viroid. Therefore, as proposed in the draft standard, Biosecurity New Zealand will keep all strains of ASBVd as regulated unless it can be proved, on the basis of their biological and molecular characteristics, that the same strain is present in New Zealand.

Biosecurity New Zealand considers that the survey results obtained in 1999 which identified the presence of ASBVd in New Zealand are reliable. The QUT laboratory identified the viroid using specific primers in RT-PCR, southern blotting and sequencing. Of the 21 sequences obtained, 14 were identical and the remaining 7 were similar but had 1-2 nucleotide substitutions in different locations. However, contrary to your submission, Dr Harding has confirmed that none of these sequences were identical to the SB-1 isolate used as a positive control during the tests. The results obtained by QUT were also confirmed by independent testing using RT-PCR and southern blotting in NPPRL.

We do recognise that inconsistent results have been obtained during ASBVd testing by the QUT laboratory and that one possible explanation might have been cross-contamination of mortars and pestles. However, this was not demonstrated to have occurred and Dr Harding has pointed out that there are a number of alternative explanations which might have affected the testing including the low concentration and erratic distribution of the viroid and the presence of inhibitory substances in the samples. Therefore, bearing in mind the previous evidence we do not consider this observation reason enough to disregard the results.

It should also be noted that by the QUT laboratory did not withdraw its New Zealand ASBVd testing service because of the inconsistent results. The reasons were based on two major concerns. Firstly, the New Zealand avocado industry indicated that they wished QUT to certify trees as ASBVd-free. The QUT laboratory considered that this was not feasible, based solely on testing, because of the low concentration and erratic distribution of ASBVd in infected plants. Secondly, QUT is essentially a research laboratory and is not set up to cater for the scale of testing required by the New Zealand avocado industry. To test the estimated >10,000 samples would require a dedicated operation implementing all the necessary quality assurance systems.

It is true that Australian avocado industry has stopped using the QUT laboratory for ASBVd testing and that some inconsistent results were obtained in the last batch of testing conducted by QUT. The reasons for this could not be determined at the time, the possibility of the mortars and pestles being contaminated was eliminated but inconsistencies still remained despite an internal PCR control being introduced. It seems most likely that these problems

were due to the concentration and distribution of the viroid but the QUT laboratory were not willing to continue testing until further research was done to resolve the issues.

Because of the low concentration and erratic distribution of the viroid, Biosecurity New Zealand has concluded that imported nursery stock should be tested twice for ASBVd during post-entry quarantine.

We were interested to hear the results of the ASBVd testing conducted on behalf of the New Zealand Avocado Nursery Association by the Institute for Tropical and Subtropical Crops. It seems most likely that the viroid either has a restricted distribution in New Zealand or has been eradicated by the efforts of growers such as your members. Biosecurity New Zealand would support in principle an official survey being carried out to establish the status of ASBVd in New Zealand.

2. *Avocado cryptic virus 3*

An assessment of the risk posed by this virus was provided when the draft import health standard for *Persea* was distributed for consultation. Although the virus is not known to cause significant economic damage to avocado, Biosecurity New Zealand considers that it is prudent to keep the virus as a regulated pest at this time. We also consider that the proposed measures, sourcing the material from areas free of the virus and inspection in post-entry quarantine, are commensurate with the risk posed by the virus.

3. Tissue culture media – charcoal

In general Biosecurity New Zealand prefers tissue culture media not to contain charcoal so that vials may be more easily inspected at the border. However, this requirement will be removed since the tissue culture plants are required to be imported into post-entry quarantine for 12 months. Biosecurity New Zealand intends to review the requirements for charcoal in the media of all imported tissue culture in the future.

4. Post-entry quarantine

Biosecurity New Zealand has carefully considered your request to import material into a lower level of post-entry quarantine. However, it has been concluded that a Level 3 post-entry quarantine facility is necessary to ensure the health of the plants imported into New Zealand.

One of the principal difference between Level 2 and Level 3 post-entry quarantine facilities is in their operation. Level 3 facilities are required to have a quality management system which ensures that the phytosanitary status of the quarantined plants is established and maintained prior to the material being released into New Zealand. This management system covers such areas as maintenance of hygiene during pruning and handling (of particular importance in avocado which may be infected with the mechanically transmissible ASBVd), and labelling and maintenance of records to track which plants have been tested and/or treated. Level 3 facilities are also operated by scientists with specific technical knowledge of the exotic diseases which may be associated with the imported crop. Biosecurity New Zealand considers that bearing in mind the importance of the avocado industry and the inspection, testing and treatment requirements, imported nursery stock should undergo post-entry quarantine in a Level 3 facility.

Biosecurity New Zealand has also recently approved Riversun Nursery Limited as a Level 3 post-entry quarantine facility for the importation of avocado nursery stock.

5. Pest list

Biosecurity New Zealand agrees that the avocado thrip (*Scirtothrips perseae*) is a serious pest of avocado. However, the species is only associated with immature fruit and leaves and is very unlikely to be associated with dormant cuttings or tissue culture and therefore is not included on the pest list. The draft import health standard also requires mandatory insecticide treatment of all cuttings.

The issue of the presence of Cercospora spot (causal organism: *Pseudocercospora purpurea*) in New Zealand was also raised by Dr. K Everett of HortResearch. According to Landcare's fungal database, *Pseudocercospora purpurea* had been isolated from the Bay of Plenty in 1984. Biosecurity New Zealand has subsequently discussed this report with Landcare and it is apparent that the report was erroneous. Therefore the fungus will be re-categorised as a regulated pest.