Senate Rural and Regional Affairs and Transport References Committee

Written Questions on Notice – Friday 11 January 2013 from Public Hearing Tuesday, 23 October 2012

Inquiry into the effect on Australian ginger growers of importing fresh ginger from Fiji

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SENATE RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

Inquiry into the effect on Australian ginger growers of importing fresh ginger from Fiji

Questions on Notice to DAFF

(January 2013)

1. Are there any implications for human or animal health if burrowing nematodes are consumed?

    a. Does the Fiji burrowing nematode variant have any different implications for human or animal health if consumed and did DAFF check this as part of the import risk analysis for fresh ginger from Fiji?

Other crop issues

2. The *Provisional final import risk analysis report for the fresh ginger from Fiji* indicates on page 32 that bananas are a poor host for the Fiji burrowing nematode variant. Would you please clarify for the committee whether there is scientific evidence that all banana species and subspecies are poor hosts for the Fiji burrowing nematode variant, or is evidence only available for the particular species or subspecies of bananas grown in Fiji?

3. Are the species of bananas grown in Australia different to the species of bananas grown in Fiji?

4. Please provide to the committee any information that DAFF biosecurity has on the pathogenicity of the Fiji intraspecific variant burrowing nematode for the particular species of other known host crops that may be grown in Australia, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

5. In conducting the import risk analysis for fresh ginger from Fiji, did DAFF Biosecurity explicitly consider the extent and consequences of the Fiji intraspecific variant burrowing nematode to the particular species of other known host crops grown in Australia, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

    a. If so, please set out what consideration was undertaken and what the extent of the pathogenicity and the consequences were assessed as for each crop?

    b. If that is not the case, why not and why didn't the Chief Executive use the powers available under reg 69G(1) of the *Quarantine Regulations 2000* to obtain relevant information or research?

6. In conducting the import risk analysis for fresh ginger from Fiji, did DAFF Biosecurity notify and seek comment from relevant industry and other stakeholders regarding the consequences of the Fiji intraspecific variant burrowing nematode for the particular species of other known host crops grown in Australia, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

7. Are bananas, carrots, citrus, lettuces, mangoes, rice, tomatoes, black peppers, coconuts, coffee, pineapples, sugarcane and tea able to be imported from Fiji?

8. In conducting the import risk analysis for fresh ginger from Fiji, did DAFF Biosecurity assess the likelihood of the Fiji intraspecific variant burrowing nematode being imported into Australia via other crops from Fiji, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

9. Does the Fiji burrowing nematode variant occur in any other countries that Australia imports crops from, including ginger or other crops known to be susceptible to burrowing nematode?

Taking the greater pathogenicity of the Fiji nematode into account

10. Does the greater pathogenicity to ginger of the Fiji intraspecific variant burrowing nematode impact the likelihood of importation of the Fiji variant relative to other variants of burrowing nematodes? How was the greater pathogenicity taken into account ?

    a. If so, please provide the committee with the findings.

    b. If not, why not?

11. Please provide similar answers to question 14 for the likelihoods of distribution, establishment, and spread of the Fiji variant relative to other variants of burrowing nematodes?

12. Was the greater pathogenicity to ginger of the Fiji intraspecific variant burrowing nematode relative to other burrowing nematodes taken into account in the assessment of consequences in the *Provisional final import risk analysis report for the fresh ginger from Fiji*?

    a. If so, please provide the committee with the findings.

    b. If not, why not?

13. Noting the much greater pathogenicity to ginger of the Fiji intraspecific variant burrowing nematode, in the *Provisional final import risk analysis report for the fresh ginger from Fiji*, did DAFF Biosecurity specifically assess the relative effectiveness of the proposed mitigation measures for the Fiji variant, compared to other variants?

    a. If so, please provide the committee with the findings.

    b. If not, why not?

Baby versus mature harvest ginger

14. The *Provisional final import risk analysis report for the fresh ginger from Fiji* (page 36) describes the rationale given for the estimate of "low" consequence for burrowing nematode, including that the 'intraspecific ginger variant was not detectable in crops that employed crop rotation with non-host crops and which used hot water treated seed planting material'. Were the consequences assessed for both baby ginger harvested at around six months and long harvest ginger harvested at around two years?

    a. What were the consequences for the two different harvest times?

    b. What information or research was used to inform the consequences for the two year harvest ginger?

Likelihood of import

15. The *Provisional final import risk analysis report for the fresh ginger from Fiji* on pages 33 – 34 provides the assessment of the probability of the importation of the Fiji intraspecific variant burrowing nematode as being "moderate" prior to mitigation measures being applied.

    a. Would you please explain to the committee why the probability is rated as moderate given:

        i. the high prevalence of burrowing nematodes in Fiji;

        ii. the high pathogenicity to ginger of the Fiji intraspecific variant; and

        iii. the inability to detect nematodes that reside inside ginger, when the ginger is visually inspected?

16. The *Provisional final import risk analysis report for the fresh ginger from Fiji* states that 'The experience of Fiji's ginger exports to other markets over a number of years does not suggest a high likelihood that *Radopholus similis* would be present in export-quality ginger.' What information was relied on to justify this statement?

    a. Please provide to the committee any relevant data on inspections or sampling of fresh Fiji ginger imported to other countries, that demonstrates the absence of the Fiji intraspecific variant burrowing nematode.

Effectiveness of mitigation measures

17. In evidence to the committee at a hearing on 23 October 2012, Dr Graham Stirling stated that:

> So the second part of the system is to hot water treat the seeds and eliminate the nematodes. If that was done properly, it would not completely eliminate the nematode but it has a good chance of reducing the populations to more manageable levels.

Similarly the Australian Ginger Industry Association informed DAAF Biosecurity in its June 2012 response to the Draft IRA for fresh Ginger from Fiji that:

> In addition, most guidelines for hot-water treatment are aimed at reducing pest populations rather than eliminating them. For most pests, protocols have not been developed to eliminate organisms; this would likely require higher temperatures or longer treatment times, and these may affect the resultant quality of ginger rhizomes.

If the information quotes above are correct, and the 10 minute 51 degree hot-water is not effective in eliminating nematodes, would that change the assessment of the likelihood of entry of the Fiji burrowing nematode variant into Australia ?

18. Would DAFF Biosecurity please confirm for the committee whether it is DAFF Biosecurity's understanding that the hot-water treatment, crop rotation and use of low pest prevalence areas are measures for controlling the numbers of nematodes, and that they do not guarantee elimination of nematodes?

19. Noting that plant-parasitic nematodes are at their most vulnerable to chemical treatment during their active phase in soil when searching for the roots of host plants (See S. R. Gowen, *Chemical Control of nematodes: efficiency and side-effects*, FAO Corporate Document Repository, http://www.fao.org/docrep/V9978E/v9978e08.htm#TopOfPage, accessed 5 January 2012). Is methyl bromide completely effective in eliminating the Fiji burrowing nematode variant (including those inside the ginger) or it is a control measure for reducing numbers?

    a. Please provide relevant scientific evidence supporting the answer.

20. Has DAFF Biosecurity conducted the risk assessment for the use of methyl bromide on ginger, as set out in the AQIS Methyl Bromide Standard?

    a. If so, please provide the committee with a copy.

    b. If not, why not?

Risks arising from taro imports

21. Noting the following evidence from the 23 October 2012 hearing for this inquiry:

> **Senator WHISH-WILSON:** We heard earlier about the cultivation methods for taro in Fiji and that it is grown in the same field as ginger. Have there been any issues with taro coming in with dirt or nematodes? Presumably there are nematodes in the soil where the taro is grown.
>
> **Mr Magee:** Yes, there have previously been and where that has happened they were rejected or treated.
>
> **Senator WHISH-WILSON:** Presumably, they are washed as well?
>
> **Mr Magee:** Yes, the whole supply chain in Fiji from the harvest to the washing, packing houses, inspection and topping and tailing.
>
> **Senator WHISH-WILSON:** Nematodes have been detected on taro?
>
> **Mr Magee:** Yes.

a. Was the Fiji burrowing nematode variant among the nematodes found on the taro?

b. What percentage of taro imports are inspected?

c. When were imports of taro from Fiji first approved?

d. What assessment of the risks to the ginger industry was conducted as part of the decision to allow taro imports from Fiji? Please provide copies of relevant documents.

    i. Why wasn't an import risk analysis undertaken, given that taro is grown in the same fields as ginger?

e. How is it possible to be certain that all the nematodes have been cleaned of the taro that has arrived in Australia?

f. Has any taro from Fiji been moved into Australian ginger growing areas?

g. Has any ginger ever been found in a shipment of taro from Fiji to Australia?

h. What other countries also import fresh taro into Australia?

i. Have burrowing nematodes been found on taro imported from any other country in addition to Fiji?

j. Have burrowing nematodes been found on taro imported from Samoa – where burrowing nematodes have been reported?

k. When did DAFF biosecurity first become aware of the Fiji variant of the burrowing nematode?

22. Noting that the Australia Ginger Industry Association informed DAFF Biosecurity of the new evidence in relation to the Fiji variant of the burrowing nematode in its June 2012 submission for the Fiji ginger IRA, has DAFF Biosecurity taken any steps to review the input conditions for taro? If so, please provide all relevant documents to the committee, if not why not?

23. Noting the evidence given by Mr Magee, quoted below from the 23 October 2012 hearing for this inquiry, please provide the committee with a summary of the problems that were encountered with taros and please provide copies of all relevant documents to the committee.

> **Mr Magee:** The very best example we have got of this is that we import taros from Fiji and we work very closely with the Biosecurity Authority of Fiji to make sure that the supply chain meets Australia's requirements. That was not always the case. We did have some problems with taros.

SENATE RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

Inquiry into the effect on Australian ginger growers of importing fresh ginger from Fiji

Questions on Notice to DAFF

(January 2013)

1. Are there any implications for human or animal health if burrowing nematodes are consumed?

    a. Does the Fiji burrowing nematode variant have any different implications for human or animal health if consumed and did DAFF check this as part of the import risk analysis for fresh ginger from Fiji?

Response: There are no known human or animal health issues associated with the consumption of burrowing nematode.

Other crop issues

2. The *Provisional final import risk analysis report for the fresh ginger from Fiji* indicates on page 32 that bananas are a poor host for the Fiji burrowing nematode variant. Would you please clarify for the committee whether there is scientific evidence that all banana species and subspecies are poor hosts for the Fiji burrowing nematode variant, or is evidence only available for the particular species or subspecies of bananas grown in Fiji?

Response: Queensland researchers Drs Mike Smith and Jenny Cobon have postulated that banana is a poor host of the burrowing nematode found in Fiji, and this is reflected in the report. No scientifically peer reviewed publication has confirmed this. DAFF research of the literature conducted during the IRA has indicated that all other *Radopholus similis* studied to date readily host on banana.

3. Are the species of bananas grown in Australia different to the species of bananas grown in Fiji?

Response: No. The main banana cultivars grown in Fiji are all present in Australia.

4. Please provide to the committee any information that DAFF biosecurity has on the pathogenicity of the Fiji intraspecific variant burrowing nematode for the particular species of other known host crops that may be grown in Australia, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

Response: DAFF is not aware of any published information of this nature.

5. In conducting the import risk analysis for fresh ginger from Fiji, did DAFF Biosecurity explicitly consider the extent and consequences of the Fiji intraspecific variant burrowing nematode to the particular species of other known host crops grown in Australia, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

    a. If so, please set out what consideration was undertaken and what the extent of the pathogenicity and the consequences were assessed as for each crop?

Response: The key attribute of *Radopholus similis* intraspecific variant is its postulated pathogenicity on ginger. As there is no published information available on the pathogenicity of the *Radopholus similis* intraspecific variant on crops other than ginger, the pest risk assessment took a conservative approach in rating the consequences of this pest on plant life or health, including other crops. The report specifically recognised the putative intraspecific strain on ginger and addressed those risks.

    b. If that is not the case, why not and why didn't the Chief Executive use the powers available under reg 69G(1) of the *Quarantine Regulations 2000* to obtain relevant information or research?

Response: Not applicable for the reasons stated above.

6. In conducting the import risk analysis for fresh ginger from Fiji, did DAFF Biosecurity notify and seek comment from relevant industry and other stakeholders regarding the consequences of the Fiji intraspecific variant burrowing nematode for the particular species of other known host crops grown in Australia, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

Response: Industry and researchers including those who worked on the pest in Fiji were consulted throughout the IRA process. Published research does not recognise the *Radopholus similis* intraspecific strain nor its host status on other crops.

7. Are bananas, carrots, citrus, lettuces, mangoes, rice, tomatoes, black peppers, coconuts, coffee, pineapples, sugarcane and tea able to be imported from Fiji?

Response: Rice, black pepper, coconuts, coffee and tea can be imported from Fiji. None of these imported products are considered a viable pathway for the burrowing nematode to enter and establish in Australia.

8. In conducting the import risk analysis for fresh ginger from Fiji, did DAFF Biosecurity assess the likelihood of the Fiji intraspecific variant burrowing nematode being imported into Australia via other crops from Fiji, including, but not limited to carrots, citrus, lettuces, mangoes, rice, tomatoes, bananas, black peppers, coconuts, coffee, pineapples, sugarcane and tea?

Response: No. The importation of other crops was outside the scope of the report.

9. Does the Fiji burrowing nematode variant occur in any other countries that Australia imports crops from, including ginger or other crops known to be susceptible to burrowing nematode?

Response: *Radopholus similis* intraspecific variant has no taxonomic status and is yet to be verified as a valid variant in Fiji. The recognition by DAFF of this variant has been undertaken as a provisional measure as a precaution until its status can be verified. It is premature to speculate on its further distribution, as it is not recognised by any other country.

Taking the greater pathogenicity of the Fiji nematode into account

10. Does the greater pathogenicity to ginger of the Fiji intraspecific variant burrowing nematode impact the likelihood of importation of the Fiji variant relative to other variants of burrowing nematodes? How was the greater pathogenicity taken into account?

Response: The proposition that the Fiji intraspecific variant burrowing nematode has greater pathogenicity than other burrowing nematodes has yet to be scientifically established. The pest was provisionally found to be a quarantine pest as some evidence was provided that its pathogenicity might be sufficiently different to Australian burrowing nematodes to qualify it as a quarantine pest for Australia. The pest risk assessment conducted in the IRA assessed it as above the ALOP, and therefore risk management measures were required.

a. If so, please provide the committee with the findings.

Response: The findings are outlined in section 4.3 of the IRA report.

b. If not, why not?

Response: n/a.

11. Please provide similar answers to question 14 for the likelihoods of distribution, establishment, and spread of the Fiji variant relative to other variants of burrowing nematodes?

Response: Please refer to the response to Question 10.

12. Was the greater pathogenicity to ginger of the Fiji intraspecific variant burrowing nematode relative to other burrowing nematodes taken into account in the assessment of consequences in the *Provisional final import risk analysis report for the fresh ginger from Fiji*?

a. If so, please provide the committee with the findings.

Response: The pathogenicity of *Radopholus similis* intraspecific variant was one factor which was taken into account in the report. Compared with the other nematodes

assessed, *Radopholus similis* intraspecific variant was found to be above the ALOP and required measures. Other nematodes were found to be below the ALOP.

b. If not, why not?

Response: This has been addressed above.

13. Noting the much greater pathogenicity to ginger of the Fiji intraspecific variant burrowing nematode, in the *Provisional final import risk analysis report for the fresh ginger from Fiji*, did DAFF Biosecurity specifically assess the relative effectiveness of the proposed mitigation measures for the Fiji variant, compared to other variants?

    a. If so, please provide the committee with the findings.

    b. If not, why not?

Response: The proposition that the Fiji intraspecific variant burrowing nematode has greater pathogenicity than other burrowing nematodes has yet to be scientifically established. Comparison of measures against *Radopholus similis* and the *Radopholus similis* intraspecific variant was not undertaken. Management measures are not required for *Radopholus similis* as it is present in Australia and is not a quarantine pest.

Baby versus mature harvest ginger

14. The *Provisional final import risk analysis report for the fresh ginger from Fiji* (page 36) describes the rationale given for the estimate of "low" consequence for burrowing nematode, including that the 'intraspecific ginger variant was not detectable in crops that employed crop rotation with non-host crops and which used hot water treated seed planting material'. Were the consequences assessed for both baby ginger harvested at around six months and long harvest ginger harvested at around two years?

Response: The assessment covers both immature and mature ginger.

    a. What were the consequences for the two different harvest times?

Response: Different harvest times were not assessed. The consequences assessment considers the impact on all plants, not just ginger crops.

    b. What information or research was used to inform the consequences for the two year harvest ginger?

Response: Information considered included impacts on commercial production of ginger in Fiji and the management practices that are employed in Australia. Research articles considered are cited on page 36 of the report.

Likelihood of import

15. The *Provisional final import risk analysis report for the fresh ginger from Fiji* on pages 33 – 34 provides the assessment of the probability of the importation of the Fiji intraspecific variant burrowing nematode as being "moderate" prior to mitigation measures being applied.

a. Would you please explain to the committee why the probability is rated as moderate given:

   i. the high prevalence of burrowing nematodes in Fiji;

   ii. the high pathogenicity to ginger of the Fiji intraspecific variant; and

   iii. the inability to detect nematodes that reside inside ginger, when the ginger is visually inspected?

Response: The proposition that the Fiji intraspecific variant burrowing nematode has greater pathogenicity than other burrowing nematodes has yet to be scientifically established. Published research indicates that burrowing nematodes are below detectable levels in well managed farms in Fiji, as they are in Australia. Heavy infestations kill the host plants and causes crop losses, which is not conducive to producing an export-quality crop. Burrowing nematodes are typically found in the roots or just under the surface of the rhizome. Feeding results in shallow water-soaked lesions on the rhizome surface, which are visible to the naked eye. Extensive rotting can occur as these lesions spread. Affected rhizomes are likely to be removed from the pathway at harvest, or during pre-export preparation.

The ranking of Moderate is also informed by interception data from New Zealand where *Radopholus similis* was detected in only three out of over 1300 consignments from Fiji over a period of 10 years. The rating additionally takes into account that while rotting rhizomes are likely to be discarded, incipient infections may not be detected and may be present on the pathway.

16. The *Provisional final import risk analysis report for the fresh ginger from Fiji* states that 'The experience of Fiji's ginger exports to other markets over a number of years does not suggest a high likelihood that *Radopholus similis* would be present in export-quality ginger.' What information was relied on to justify this statement?

Response: Interception data obtained from New Zealand indicates that detections of *Radopholus similis* on fresh ginger exported from Fiji are very rare.

a. Please provide to the committee any relevant data on inspections or sampling of fresh Fiji ginger imported to other countries, that demonstrates the absence of the Fiji intraspecific variant burrowing nematode.

Response: We are not aware of any data that demonstrates the absence of *Radopholus similis* intraspecific variant. Interception data from New Zealand indicated a very low rate of interception of *Radopholus similis*. In the period June 2000 to January 2011, New Zealand intercepted *Radopholus similis* in only three out of more than 1300 consignments of fresh ginger from Fiji.

Effectiveness of mitigation measures

17. In evidence to the committee at a hearing on 23 October 2012, Dr Graham Stirling stated that:

> So the second part of the system is to hot water treat the seeds and eliminate the nematodes. If that was done properly, it would not completely eliminate the nematode but it has a good chance of reducing the populations to more manageable levels.

Similarly the Australian Ginger Industry Association informed DAAF Biosecurity in its June 2012 response to the Draft IRA for fresh Ginger from Fiji that:

> In addition, most guidelines for hot-water treatment are aimed at reducing pest populations rather than eliminating them. For most pests, protocols have not been developed to eliminate organisms; this would likely require higher temperatures or longer treatment times, and these may affect the resultant quality of ginger rhizomes.

If the information quotes above are correct, and the 10 minute 51 degree hot-water is not effective in eliminating nematodes, would that change the assessment of the likelihood of entry of the Fiji burrowing nematode variant into Australia ?

Response: The assessments for likelihood of entry assumed that hot water treatment was not always applied. Were hot water treatments applied the assessment would have been lower.

18. Would DAFF Biosecurity please confirm for the committee whether it is DAFF Biosecurity's understanding that the hot-water treatment, crop rotation and use of low pest prevalence areas are measures for controlling the numbers of nematodes, and that they do not guarantee elimination of nematodes?

Response: No quarantine treatment can guarantee total elimination of any pest in practice. However, published information indicates that the above measures would reduce the quarantine risk to below Australia's ALOP.

19. Noting that plant-parasitic nematodes are at their most vulnerable to chemical treatment during their active phase in soil when searching for the roots of host plants (See S. R. Gowen, *Chemical Control of nematodes: efficiency and side-effects*, FAO Corporate Document Repository, http://www.fao.org/docrep/V9978E/v9978e08.htm#TopOfPage, accessed 5 January 2012). Is methyl bromide completely effective in eliminating the Fiji burrowing nematode variant (including those inside the ginger) or it is a control measure for reducing numbers?

    a. Please provide relevant scientific evidence supporting the answer.

Response: Methyl bromide is an effective quarantine treatment used by many countries. In practical application it is possible that low numbers may survive a quarantine treatment. The risk in this case does not differ from other similar life stages of nematodes treated at the border, and methyl bromide fumigation would reduce the quarantine risk to below Australia's ALOP.

20. Has DAFF Biosecurity conducted the risk assessment for the use of methyl bromide on ginger, as set out in the AQIS Methyl Bromide Standard?

a. If so, please provide the committee with a copy. n/a

b. If not, why not?

Response: The risk assessment as set out in the AQIS Methyl Bromide Standard is an operational procedure carried out before a fumigation. It is not relevant to the IRA process.

Risks arising from taro imports

21. Noting the following evidence from the 23 October 2012 hearing for this inquiry:

> **Senator WHISH-WILSON:** We heard earlier about the cultivation methods for taro in Fiji and that it is grown in the same field as ginger. Have there been any issues with taro coming in with dirt or nematodes? Presumably there are nematodes in the soil where the taro is grown.
>
> **Mr Magee:** Yes, there have previously been and where that has happened they were rejected or treated.
>
> **Senator WHISH-WILSON:** Presumably, they are washed as well?
>
> **Mr Magee:** Yes, the whole supply chain in Fiji from the harvest to the washing, packing houses, inspection and topping and tailing.
>
> **Senator WHISH-WILSON:** Nematodes have been detected on taro?
>
> **Mr Magee:** Yes.

a. Was the Fiji burrowing nematode variant among the nematodes found on the taro?

Response: No.

b. What percentage of taro imports are inspected?

Response: 100 percent of taro consignments are subject to inspection on arrival. A sample of 600 taro corms per consignment is inspected.

c. When were imports of taro from Fiji first approved?

Response: The importation of fresh taro into Australia is a historical trade that likely predates the regulated import system. Information on when the taro trade began is not available.

d. What assessment of the risks to the ginger industry was conducted as part of the decision to allow taro imports from Fiji? Please provide copies of relevant documents.

    i. Why wasn't an import risk analysis undertaken, given that taro is grown in the same fields as ginger?

Response: The importation of fresh taro is a historical trade. Information on what risks were considered at the time of commencement of the trade is not available. DAFF reviewed the policy for imported taro from all sources in 2011. A number of pests were considered including their potential impact on other crops. *Radopholus similis* was

considered as part of the risk assessment, however was not recognised at that time as a quarantine pest.

e. How is it possible to be certain that all the nematodes have been cleaned of the taro that has arrived in Australia?

Response: Cleaning of taro is part of the risk management process designed to reduce the pest risk to below Australia's ALOP.

f. Has any taro from Fiji been moved into Australian ginger growing areas?

Response: Fresh taro from Fiji is imported into Brisbane on a regular basis. DAFF does not monitor the movement of goods once they are released from quarantine control.

g. Has any ginger ever been found in a shipment of taro from Fiji to Australia?

Response: We are not aware of ginger ever being imported in taro consignments from Fiji.

h. What other countries also import fresh taro into Australia?

Response: Presently import permits have been issued for Fiji, Tonga and Niue. Previously taro has been imported from China, Solomon Islands, Vietnam, Samoa, Cook Islands, Vanuatu, Papua New Guinea and Thailand.

i. Have burrowing nematodes been found on taro imported from any other country in addition to Fiji?

j. Have burrowing nematodes been found on taro imported from Samoa – where burrowing nematodes have been reported?

Response: There are no records of burrowing nematodes being detected on taro from any country.

k. When did DAFF biosecurity first become aware of the Fiji variant of the burrowing nematode?

Response: Claims of the existence of a possible ginger variant of burrowing nematode in Fiji were raised during the IRA process by Dr Smith and the ginger industry. DAFF provisionally recognised this variant following the provision of unpublished research during the comment period on the draft IRA report.

22. Noting that the Australia Ginger Industry Association informed DAFF Biosecurity of the new evidence in relation to the Fiji variant of the burrowing nematode in its June 2012 submission for the Fiji ginger IRA, has DAFF Biosecurity taken any steps to review the input conditions for taro? If so, please provide all relevant documents to the committee, if not why not?

Response: No, taro is a poor host of burrowing nematode, and reports of *Radopholus similis* being found on taro in the field are rare.

23. Noting the evidence given by Mr Magee, quoted below from the 23 October 2012 hearing for this inquiry, please provide the committee with a summary of the problems that were encountered with taros and please provide copies of all relevant documents to the committee.

> **Mr Magee:** The very best example we have got of this is that we import taros from Fiji and we work very closely with the Biosecurity Authority of Fiji to make sure that the supply chain meets Australia's requirements. That was not always the case. We did have some problems with taros.

Response: Eleven consignments of fresh taro corms imported from Fiji were rejected between March and September 2010 due to symptoms of bacterial and fungal infection. As accurate identification of pathogens can take considerable time and is often inconclusive, typically the only measures that can be applied to affected consignments are re-export or destruction. Correspondence between the Biosecurity Authority of Fiji and DAFF about the taro problems is attached.

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Date: 07/07/2010

Ms Lois Ransom
Chief Plant Protection Officer and
NPPO Contact Point,
Department of Agriculture Forestry and Fisheries,
Canberra, ACT
AUSTRALIA.

Dear Lois,

Subject: Rejection of Fresh Taro Consignments from Fiji by AQIS

Greetings and bula vinaka from the Biosecurity Authority of the Fiji Islands office in Suva, Fiji.

Nine air freighted fresh corms of taro (*Colocassia esculenta*) consignments from five different exporters in Fiji to Australia have been rejected since March this year in Sydney and Brisbane ports of entry. Our exporters informed me that these consignments were rejected because the taro showed signs of rotting on arrival. Disappointingly, AQIS did not notify the Fiji Biosecurity Authority as we would have expected under bilateral and obligatory arrangements within the ISPM 13 of the IPPC. Such rejections resulted in large monetary losses to our exporters amounting to an estimated value of $FJD 200,000 and a loss of livelihoods to small holder farmers who depend on taro for their livelihoods. The actions of AQIS have rendered the exporting of fresh taro to Australia a highly risky enterprise which may not now be economically viable.

I wish to express our dissatisfaction over the failure by AQIS inspectors to follow procedures as outlined under Condition C6000, section 13 (a) and (b) in the AQIS ICON database regarding importation conditions for taro where the pathogens were not identified prior to assessment on the quarantine status of the organisms. There was also no official notification from AQIS or your office of the rejections to help us investigate the cause of the non-compliance and thereafter facilitate steps to avoid recurrence. We were informed indirectly by the exporters. It is likely

that the pathogen is of non quarantine significance and the consignments should have been treated and released. We are undertaking research to identify these pathogens. Your identification of the pathogens in rejected shipment will assist us in completing this work.

We also need a full inspection report of each of those consignments to enable us to trace back if there was any failure on our part in the inspection and certification process. We were informed that the importers were advised on costs of determination of the organism and the duration of time required. They made an economic decision not to pay for the identification and opted for re-export back to Fiji. Therefore we are willing to meet the costs of diagnostics of the pathogens, should there be any rejected consignments in the next three months. The information obtained would help us to improve the taro commodity pathway. For your information, since the first rejection in early March, we have inspected and audited all pack houses and storage facilities of all the exporters. Meanwhile we are reviewing the procedures.

Fresh taro is a perishable commodity, and once there is physical damage, fungus and bacteria are likely to invade the open tissues. Thus a likely factor in leading to these rots is the AQIS requirement that the eyes be removed. Such an extreme quarantine treatment measure inflicts severe damage on the taro's protective outer layer. It can be expected that these damaged corms are ripe for invasion by pathogens while they sit for a prolonged period in a container at ambient temperature. The reason for this physical treatment is to prevent the corms from germinating. Yet taro will only germinate if the appropriate growing environment is provided after removal of roots and the top.

The protocol currently in place for export of Fiji taro to Australia, consequently, necessitates physical damage to the product. This does not seem to be technically justified. Such a measure is not required when we export taro to New Zealand and the United States (including Hawaii). It is of note that Hawaii has a significant, culturally important, taro industry. Fiji does not have taro leaf blight (*Phytophthora colocasiae*). As I understand it, the major viruses of concern with taro are *Alomae* , *Colocasia bobone disease virus (*CBDV*) Dasheen mosaic virus* (DsMV) and *Taro badnavirus* (TaBV). According to the Taro Pest ACIAR Publication, Alomae and CBDV are not present in Fiji[1], while DsMV is widespread throughout the Pacific, however, only in French Polynesia are severe symptoms reported. CBDV is also reported in Fiji but it is also reported to be present in Australia. On that note, under the IPPC Basic principles of Transparency *(Contracting parties shall, on request, make available to any contracting party the rationale for phytosanitary requirements, restrictions and prohibitions)*, we kindly solicit your good office to furnish us with information justifying the economic importance of these viruses to the Australian taro industry.

What now seems to be necessary is a comprehensive review to assess the appropriateness of the current protocol for taro imports into Australia that requires the product to be physically damaged. This review would provide the basis to really identify the risks and build appropriate protocols to deal with them.

I sincerely look forward for your response and for further discussions with your office, Biosecurity Australia and AQIS.

Kind regards,

Ilaitia Boa
Director,
Fiji Biosecurity Authority & NPPO Contact point.

Copy: Permanent Secretary of Agriculture, Fiji.

Australian Government

Australian Quarantine and Inspection Service

Mr Ilaitia Boa
Director
Fiji Biosecurity Authority & NPPO Contact Point
Fiji Biosecurity Services Division
Ministry of Primary Industries
GPO Box 18360
Suva
FIJI ISLANDS

Dear Mr Boa

Thank you for your letter of 7 July 2010 to Ms Lois Ransom regarding the rejection of fresh taro consignments from Fiji by the Australian Quarantine and Inspection Service (AQIS).

AQIS welcomes the opportunity to work with the Fiji Biosecurity Authority on issues of mutual interest to both countries and in particular to improve trade between the two countries. AQIS will ensure timely notification be given to Fiji Biosecurity on future taro non-compliances that lead to the rejection or re-export of consignments. Copies of the Phytosanitary certificates and details of any observations on defects of these consignments will be sent to Fiji Biosecurity via email.

Please note that during 2007 to 2009, AQIS has provided information to Fiji on the pest/disease interceptions being made by AQIS on fresh taro imports from Fiji. I understand that the issue of pest interceptions was also discussed in a recent teleconference between Plant Biosecurity officers and your office on 24 June 2010.

I note your offer to meet the costs of diagnostics of pathogens on rejected consignments over a period of 3 months. Should this become necessary, AQIS would be happy to discuss this matter further with you. However, I would like to alert you of the difficulty in progressing isolation and identification of the causal agents from soft rot symptoms on a commodity like taro tubers. The current import conditions for fresh taro require consignments to be free of disease symptoms. This is a standard requirement applicable to all fresh fruits and vegetables from all countries. Significant levels of rot on fruits present a problem for identification as the causal organism may be masked by the presence of other spoilage organisms. It also takes several weeks for pathology results to become available and at the end of the exercise the outcome may be inconclusive. You would be aware of the recent difficulties in obtaining the identification for the suspected bacterial crown rot detected on Fijian pawpaw. Furthermore, the results of the identification of pathogens in one consignment are not transferrable to future consignments. These constraints lead to importers choosing to re-export perishable commodities such as taro rather than elect to have symptoms identified. In some instances where there is significant rotting to the consignment, importers choose to destroy the consignments in Australia. Full identification does not make any difference to the outcome in these cases as AQIS cannot permit the entry of diseased product of unknown quarantine status.

As requested in your letter, I have attached summaries of the inspection reports and details of the pest interceptions on fresh taro from Fiji. I have also been advised by my colleagues in Plant Biosecurity that information on pest interceptions have been provided to Mr Rob Duthie, who is collaborating with Plant Biosecurity on behalf of the Fiji Ministry of Primary Industries.

You may be aware that the current review of the import conditions for fresh taro from all countries will be released by Biosecurity Australia for stakeholder consultation soon. A copy of the draft, which investigates

the quarantine status of the organisms you have outlined in your letter, can be made available to you and your staff for comments.

I look forward to improving the taro pathway and effecting positive outcomes for both countries.

Yours sincerely,

Rob McGahy
Acting General Manager
Plant Quarantine and Export Operations Branch (AQIS)
Plant Division
Biosecurity Services Group

6 August 2010

Arrival Date	Export Country	SUPPLIER NAME	Volume x kg	Phytosanitary certificate reference	Pest detected	Comments
10/03/2010	Fiji	[redacted]	4160kg	259165	Oomycete (Pythium or Phytopthora)	Re-exported (option chosen by the importer)
15/03/2010	Fiji	[redacted]	5600kg	259167	Bacterial soft rot of corn - cultured	Re-exported (option chosen by the importer)
26/03/2010	Fiji	[redacted]	3000kg	25339	Soft rot symtoms with oomycete hyphae + non parasitic nematode	Re-exported (option chosen by the importer)
29/03/2010	Fiji	[redacted]	6600kg	251722	Soft rot symtoms with oomycete hyphae	Re-exported (option chosen by the importer)
6/05/2010	Fiji	[redacted]	1320kg	251945	Fungal and bacterial contamination	Re-exported (option chosen by the importer)
11/05/2010	Fiji	[redacted]	4200kg	251949	Pythiacious fungus, Fusarium sp. + non parasitic nematode	Re-exported (option chosen by the importer)
12/05/2010	Fiji	[redacted]	5620kg	253077	Pythiacious fungus	Re-exported (option chosen by the importer)
7/06/2010	Fiji	[redacted]	14000kg	253187	Bacterial rot contamination	Re-exported (option chosen by the importer)