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Our Ref:

Dear Dr Grant,

BIOSECURITY AUSTRALIA ADVICE - DRAFT IMPORT RISK ANALYSIS REPORT FOR FRESH APPLE FRUIT FROM THE UNITED STATES OF AMERICA PACIFIC NORTHWEST STATES

Thank you for your memorandum of 22 October 2009, notifying the Department of Primary Industries (DPI) of the release of the Draft Import Risk Analysis (IRA) report for fresh Apples from the Pacific Northwest of the United States of America (USA) for comment.

Specialists within the DPI have examined the draft IRA and identified a number of issues which should be considered by Biosecurity Australia before the IRA report is finalised. The following summarises some of the main issues:

There are several pests which have been rejected from further analysis in the pest categorisation step, but which should be further assessed. These include the pathogens *Mycosphaerella pomi* and *Botrytis mali*, and pests including the rosy apple aphid and the plum curculio.

Victoria believes that it is not appropriate to use existing risk assessments for fire blight, European canker and apple scab from the IRA for apples from New Zealand, in the present IRA.

The impact of changed pesticide practices on potential international market access, which would result from the introduction of some of the pests of concern, has not been factored into the assessment.

There are issues with some of the risk management measures proposed e.g. evidence for the efficacy of 3000 fruit sampling for detection of apple leafcurling midge is not provided.

The USA requirements for mitigation of the leafroller pest light brown apple moth in the export of Australian apples and pears to the USA should be part of the Australian requirement for mitigation of leafrollers in apples from the North West of USA.

Further detail of these and additional issues are found in the attached response by DPI.

Thank you for the opportunity to provide comments on the draft IRA and I look forward to being notified of any further progress in its development.

Yours sincerely,

DR HUGH MILLAR
Executive Director Biosecurity Victoria / Chief Veterinary Officer

Draft Import Risk Analysis Report for Fresh Apple Fruit from the Pacific North West of the USA – December 2009:

Department of primary industries, Victoria response

Introduction

DPI Victoria specialists from Biosecurity Victoria and Biosciences Research Divisions have reviewed this draft Import Risk Analysis (IRA) and have identified a number of issues which should be addressed by Biosecurity Australia (BA) before the IRA report is finalised.

A). Plant Pathogens

It is inappropriate to use existing risk assessments for fire blight, European canker and apple scab from the IRA for apples from New Zealand. **It is unreasonable to assume that a risk assessment for a particular quarantine pest from one country is the same as an assessment for the same pest from another country, especially when these countries and regions are very different.** Factors affecting these assessments which can and do vary between countries (and indeed regions within a country) include:
Different apple varieties with different susceptibility to the pathogen.
Different pest distribution and intensity throughout production areas.
Different horticultural management practices e.g. overhead irrigation compared with trickle irrigation.
Different climatic conditions e.g. extended wet periods during critical growth stages of the crop favouring pathogens in one area compared with there absence in another, drier, region.
Refer to ISPM No. 2 Pest Risk Analysis: "The validity of any existing PRA should be verified and …its relevance to the PRA area should be confirmed."

Counter seasonal imports from the USA in the Northern Hemisphere, will result in fruit arriving during the Southern Hemisphere spring and summer. This increases the likelihood of all pathogens (and pests) finding actively growing hosts during the growing season, increasing the risk of them establishing and spreading in Australia.

The specification of the type of apple to be imported is quite loose. Page 2 Scope indicates importation of commercially produced mature fresh apple fruit, free of trash…" This could include e.g. graded and packed retail-ready fruit in small boxes, or large bulk bins of ungraded fruit. This can have a very significant bearing on the risk – ungraded fruit could include:
fruit carrying rots (European canker, fire blight and other rotting organisms),leaves and other trash could be present in higher levels than in graded and packed fruit (increasing risk from diseases and pests which can be present on such trash as well as on fruit).

1. Pest Categorisation (Appendix A, p270-378)

There are several significant pathogens which have been discounted from further risk assessment in the Appendix A. Pest Categorisation:

Brooks fruit spot (*Mycosphaerella pomi*). Travis and Ngugi (2008) in Pennsylvania consider that this disease can cause severe losses. Similarly, a report in the Washington State University Postharvest Information Network (2005) notes that "... it may cause severe losses at times."

This indicates the potential for economic consequences in the parts of Australia where it does not occur and that it should be included for pest risk analysis.
Consequently, this pathogen should be considered further in the Import Risk Analysis.

Botrytis mali. This pathogen has probably been mistaken for *B. cinerea* in many instances, accounting for the relatively few recent records. However, see Mikani *et al* 2008, who isolated *Botrytis* from apples in Iran, and identified the pathogen as B. mali using PCR methods of O'Gorman. O'Gorman (2008) indicated the possible economic implications for control of the two different species of Botrytis in apple production, packing and marketing.
Consequently, this pathogen should be considered further in the Import Risk Analysis.

2. Pest risk assessments for quarantine pests (IRA Section 4, p39-154)

Fire blight (*Erwinia amylovora*), European canker *(Neonectria ditissima) and Apple scab (Venturia inaequalis)* (IRA Sections 4.1, 4.23 and 4.26)

The IRA presumes that the unrestricted risk estimate for apples from NW USA is the same as existing policy for *Erwinia amylovora, Neonectria ditissima* and *Venturia inaequalis* as found in the Final Import Risk Analysis Report for Apples from New Zealand (Biosecurity Australia 2006). However, there are significant differences between:
- production systems in the two countries, including practices such as overhead irrigation, which favour spread and infection by many fungal and bacterial pathogens.
- the cultivars grown
- the climatic conditions under which apples are grown (and which have a major impact on the prevalence of these diseases.)

The impact of different production systems and the wide range of climatic conditions under which apples are grown in the NW of USA may impact on the likelihood that imported fruit could be a pathway for these pathogens.
All these factors indicate the need to assess the risk from these three diseases in imported US apples separately from the risk from NZ imported apples.

3. Pest risk management

Fire blight

According to Smith (2009), 5-10 active cankers per hectare of trees are sufficient to produce enough bacteria to severely contaminate blossoms on all trees. Smith also considers that there is "...an ever increasing incidence of fire blight in the Pacific Northwest...". Such levels may not be adequately managed by the management measures proposed by BA, including the proposed inspection intensity of a 95% confidence level that visual symptoms would be detected if shown by 1% of trees.

Use of antibiotics is an integral part of the fire blight management regime in the Pacific NW (as in most other parts of the USA). While use of antibiotics is approved in the US (and New Zealand), and estimates indicate that 20 or more tonnes of streptomycin and tetracycline are sprayed annually on tree crops in the USA (Falkiner 2007), such use is not presently approved in Australia, and is unlikely to be in the current climate of concern about overuse of antibiotics. Although plant use is only a fraction of the total antibiotic use in the USA, McManus et al (2002) concede that "...the role of antibiotic use on plants in the antibiotic-resistance crisis in human medicine is the subject of debate."

B). Invertebrate Pests

A draft import risk analysis report for fresh apple fruit from the United States of America Pacific Northwest States was developed by Biosecurity Australia in Oct 2009. Biosecurity Victoria requested input and comment related to insect pests (especially apple maggot and other pests of moderate/high consequences) and in particular pest categorisation, entry, establishment, spread, consequences and proposed pest risk management.

Protocols for the assessment of risks in the IRA do not allow for criticism of the methods of risk assessment, but the risk assessment score can be addressed.

In all cases, the assessment scores ignored the impact of changed pesticide practices on international market access, focussing instead on whether presence of the pest itself would impact on market access.

The assessments also appear to assume that market access would be restricted for only those local areas, districts or regions that had the pest. This ignores approaches taken by most importing markets to consider the entire country as infested until such time as pest free zones (PFZ) or areas of low pest prevalence (ALPP) can be established.

Impact of most incursions on international trade would extend beyond local impact since the mainland is often considered as the entity being assessed. Establishment of pest free zones and ALPP take years to implement and markets lost are difficult to regain. This means that most of the incursions would result in a score of 'E' at either the local, district or regional level for international trade, based on the chemical usage required to manage the pest, even though the pest itself may not create a market access issue.

Although in many instances this may not change the risk assessment score, there are some pests that scored below 'low' that may in fact rescore as low if the analysis took account of pesticide use impacts and impact of time frames required to implement ALPPs.

This reviewer has had insufficient time to complete a major review of the pest literature for the Pacific Northwest USA, but there do not appear to be major pests that have been omitted. However, pests from outside the Pacific Northwest that could become established after finalisation of the IRA, such as plum curculio, should have specific mention in the IRA. *(Plum curculio is a serious pest of both stone and pome fruit. The damage it does to stone fruit such as nectarines predisposes fruit to brown rot infections. Smith et al 1997)- comment inserted by BW.*

Invertebrates that are pests of fruit have only been assessed as being on the pathway if they have life stages that may be present on the fruit at harvest. This reduces the perceived risk associated with insects that would be present on trees/ fruit during harvest but have the ability to disperse in

the packing facility and shelter in packaging material such as cartons. Weevils, bugs and spiders fit this category.

Documentation / assessment of probability of entry in most cases for invertebrates appears to rely on the use of organophosphates as documented in spray guides developed around 2004-06. **The USA has moved away considerably from the most commonly recommended organophosphates such as azinphos methyl and parathion methyl. Removal of these products may result in an upsurge of pests, especially 2 pests and increase the probability of entry.**

Comments on specific invertebrate pests follow:

Flat Scarlet Mite *Cenopalpus pulcher*
Assessment of probability of spread has ignored the likelihood that the pest may go undetected for several years in home gardens and then be transported on fruit by 'trade' amongst home gardeners.

Spider mites
The spider mites concerned are, to the untrained eye, almost identical to species existing in Australia and would therefore be ignored by the general public and could establish without notice once they passed through quarantine.

Males develop faster than females and it is common for males to mate with their mothers if no other females are present. The mites have a wide host range that is readily available in Australia.

Factors above, when combined, suggest that probability of spread would be high, once a small population established.

Overall probability of entry, establishment and spread = M x H x H = Mod.

Consequences are under-rated since spider mites readily develop resistance to acaricides and the ability to control the pest would be compromised. In addition, the increased use/requirement for pesticide interventions would have significant impacts on international trade because of the increasing emphasis on low pesticide inputs for our major export markets. This would generate a consequence of D at a district level at least for international trade and an overall consequence rating of low.
Unrestricted risk then = low, not very low and requires risk management approaches to be developed.

Rosy apple aphid *Dysaphis plantaginea*
The draft IRA indicates that no risk assessment is required because there is no potential to be on the pathway. In California it spends summer on plantain but these winged females move back to apples in September and produce wingless females which then mate in Sept-Oct. Although these mated females lay overwintering eggs in mid-late Oct on bark and twigs it is possible some could be on the fruit in calyxes at harvest in October.

This aphid is potentially one of the most damaging aphids infesting apples since the toxin it injects can stunt fruit growth. See University of California Integrated pest management for apples and pears. Publication 3340. 1991.

Plum curculio *Conotrachelus nenuphar*
Summer brood emerges in July-August and feed on fruit during August. They may be present on trees during harvest and one of the most likely means of long-distance dispersal is as adults in packing material (European Plant Protection Organisation data sheet on quarantine organisms No.35). **This pest is particularly damaging to apple and should have a risk analysis completed.**

Areas of low pest prevalence for *Grapholita* moths.
The section on components of demonstrating an ALPP (p251) specifies monitoring and trapping for the listed species. USDA Animals Plant Health Inspection Service should supply evidence that the monitoring and trapping program is effective under the various treatment protocols i.e. if mating disruption is used as a control measure in the proposed ALPP then demonstrate that the trapping program is effective under mating disruption (pheromone traps are of little use in mating disruption treated orchards).

Apple Curculio *Anthonomus quadrigibbus*
The draft IRA considers the greatest risk comes from larvae pupating in fruit. Since peak emergence actually occurs in late July or early August at the start of the Pacific North West harvest adults are likely to be on fruit in bins in the orchard. Once transported to the packing shed they could act like several other weevil species and find their way to cartons and other packing material. Although these adults will be unmated, the cool storage regime may simulate winter conditions and break diapause on entry to Australia in Spring Summer. Any mitigation methods should take this possibility into account. This may increase probability entry, establishment, and spread to low. The impact of re-introduction of organophosphates (OP) to control this pest in Australia will likely lead to loss of export market access, especially since treatment would need to occur close to harvest, because our export targets are refusing to accept fruit with OP residues and in some cases even use of OP's.

Plant bugs *Lygus* spp.
Bugs are present in the orchard at harvest and can be present in bins of fruit in the orchard because they often invade the bins while they are sitting exposed. Lygus bugs in the bins may act in a similar way to apple curculio and exit the bins in the packing house and infest cartons. This may increase the probability of importation to low, which would increase probability of entry to low, which in turn increases the unrestricted risk to low, requiring risk management measures.

Campylomma verbasci was considered not to be on the pathway but this ignores the likelihood of it being present on trees at harvest as a predator rather than a pest, and finding its way into bins and then packaging material. *C. verbasci* has similar habits, except for overwintering behaviour, as apple dimpling bug (*C. liebknechti*) in Australia. Further information should be requested regarding its prevalence in orchards close to harvest.

Leafrollers
Eggs laid in the calyx would not be easily removed by washing or brushing. Larvae in the calyx cavity are difficult to detect, especially early instars. Early instars would have little problem completing their development on the remnant apples (they used to be reared on small apples in the laboratory) so it is not a requirement that they need to be close enough to another host plant to find it randomly. Since larvae look similar to native light brown apple moth, once through quarantine inspection it is unlikely anyone would recognise them as an exotic. Probability of distribution is therefore possibly high rather than moderate.

The proposed pest risk management for leafrollers is a standard 600 cut fruit inspection. The US requirement for Australian apples and pears exported to the USA included field assessments based on population monitoring of moths and larval searches on trees in identified export blocks. This should form part of the Australian requirement for apples from PNW USA.

Apple leafcurling midge *Dasineura mali*
Pest risk management for this species indicates that the NZ option of visually inspecting 600 fruit from each lot was insufficient to mitigate the risk posed by D.mali and a 3000 fruit sample has been proposed. Evidence should be provided that this will adequately mitigate the risk.

Apple maggot *Rhagoletis pomonella*
The pest risk management section for this pest indicates that no approved quarantine measures exist for this pest but intrastate quarantine operates to control movement of apples from *R.pomonella* quarantine areas. APHIS should provide evidence for effectiveness of such measures before DAFF accepts PFAs as a risk mitigation measure for this pest.

Comments on Invertebrate pests prepared by:
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