New Zealand Potatoes and risk assessment

Potato trade from New Zealand

Until 1988 Australia allowed imports of potatoes for processing from New Zealand. Trade stopped because New Zealand could not certify area freedom for the quarantine pest, potato cyst nematode (PCN).

New Zealand requested access for potatoes for processing in 2006 with measures similar with those now used to move potatoes domestically between some States within Australia from PCN control areas for processing.

In 2008 Zebra chip disease and the tomato potato psyllid (the insect that can spread the disease from plant to plant) was confirmed present in New Zealand. Australia immediately banned trade in all host material (e.g. tomatoes, capsicums). Australia was entitled to take this action under the SPS Agreement (Article 5.7). However, we are then obliged to consider emergency measures in the short term and more permanent measures based on a risk assessment '*conducted within a reasonable period of time*'.

In 2009, DAFF conducted a risk assessment for zebra chip and the tomato potato psyllid for all pathways – fruit, vegetables and nursery stock (an explanation of risk and how it is estimated is discussed in Attachment A). In undertaking this work, DAFF attended a number of conferences and workshops to present the findings of the 2009 assessment, including at the AUSVEG Zebra Chip Industry Summit. No substantive concerns were raised by AUSVEG or other potato representative bodies at that time. Trade in capsicums and tomatoes from New Zealand recommenced under the conditions that had been developed through this process. Since 2009, over 13 000 tonnes of tomatoes and capsicums have been imported and Australia remains free of the psyllid and the zebra chip bacterium.

As reported on the DAFF website, the psyllid has been intercepted twice at quarantine inspection. Both consignments were fumigated to kill the psyllid and the companies involved in the exports were suspended from trade and remain so. This is our biosecurity system at work.

In order to address New Zealand's request for access to Australia for potatoes for processing, DAFF commenced a specific review of biosecurity measures for potatoes, assessing all the pests associated with potatoes from New Zealand. As conditions for the import of potatoes for processing from New Zealand already existed and an update to those conditions was delivered as a result of the 2009 assessment undertaken on zebra chip and the psyllid, the purpose of the review underway is to determine the established measures remained current.

DAFF released the draft review for stakeholder comment on 3 July 2012. The 60 day comment period closed on 3 September 2012. Twenty seven submissions were received. The comment period allows stakeholders to present evidence that the proposed measures are not effective.

All submissions will be analysed in full and taken into account prior to finalising the review.

DAFF regularly works with world-leading experts when reviewing and assessing the science relevant to biosecurity risks. This is in addition to the opportunity for stakeholders to comment on specific policies and provide any scientific information that they believe supports different biosecurity conditions.

Recognising concerns raised during the public consultation process, DAFF will engage an independent plant pathologist to review the assessment, and the latest information on zebra chip disease (*Candidatus* Liberibacter solanacearum) relevant to the potential import of potatoes for processing.

It is important to note that measures for New Zealand potatoes for processing have not been finalised.

Zebra chip disease and the tomato potato psyllid

Zebra chip disease has been studied since 1994 when symptoms were first described in Mexico. It was later detected in southern Texas, USA in 2000. Zebra chip disease was confirmed present in New Zealand in 2008. Since the detection of zebra chip in the USA, it has been extensively studied and work on this disease complex continues. The bacteria that cause Zebra chip disease are very fragile and can only survive inside living host tissue.

The Zebra chip disease in New Zealand is known to spread from plant to plant in three ways;

- From diseased tubers that sprout to form a new plant; these new plants can be infected.
- When a particular insect, the tomato potato psyllid, feeds on a diseased potato plant and eats some bacteria, which can then live inside the insect. When the insect then feeds on a healthy plant it can transfer some bacteria to start a new infection. An insect that can do this is known as a vector.
- By grafting infected plant material onto uninfected plant (this does not occur naturally, only by human intervention).

Once potatoes are processed they cannot grow and tuber and graft transmission cannot occur. The tomato potato psyllid only feeds on above ground plant material and is not associated with potato tubers.

Trade in vegetables–exports

Australia exported $184 million worth of fresh vegetables in 2011-12; $22 million of this was potatoes (not including seed potatoes).

Australia exported $86 million worth of frozen or processed vegetables in 2011-12; $19 million of this was potatoes.

Trade in vegetables–imports

Australia imported $118 million worth of fresh vegetables in 2011-12; there have been no potato imports since 1988.

Australia imported $678 million worth of frozen or processed vegetables in 2011-12; $136 million of this was potatoes.

Risk management methods

The review recommends that potatoes only be permitted if they have been washed and/or brushed to remove soil and trash and have been subjected to quarantine inspection by both New Zealand and Australian authorities. Once landed in Australia, transport will be in secure containers and all potatoes must be sent for processing under quarantine control. The processing facility will be in a metropolitan area associated with the port of entry.

The metropolitan area is defined as the suburban area around a designated port, for example around Sydney, Port Kembla, Newcastle, Brisbane, Melbourne, Adelaide and Perth. The limits of the metropolitan area for any designated port are determined by assessment by DAFF. Areas not classified as metropolitan are deemed non-metropolitan or rural. Under these arrangements, delivery could not occur at regional metropolitan areas such as Ballarat, Victoria or Ulverstone, Tasmania. The processing facility must be a quarantine approved place. This is defined as;

> A place approved by DAFF under section 46A of the *Quarantine Act 1908 (Cwlth)* where goods of a specified class that are subject to quarantine may be treated or otherwise dealt with. Also known as quarantine approved premises.

Full details of arrangements for quarantine approved premises can be found at the following link: http://www.daff.gov.au/aqis/import/general-info/qap

All waste must be disposed of using a quarantine approved treatment[1]. Approved treatments include autoclaving and incineration. Deep burial is also considered a suitable method of disposal, however,

[1] Link to approved waste disposal facilities: http://www.daff.gov.au/aqis/import/general-info/qap-waste-disposal-facilities

there are moves away from using deep burial and NSW now has no approved site available. As a consequence it is unlikely this type of disposal will be used.

Another consideration that adds to these strict biosecurity arrangements is the commercial imperative for imports to support and maintain a viable market. The likelihood of a product which tastes burnt and is discoloured (as is the case for zebra chip infected potatoes) being commercially acceptable and traded is remote. There is a significant commercial driver to source zebra chip free potatoes for processing.

Fresh, whole potatoes from New Zealand will not be available for retail sale. Potato products for purchase in Australia will only be released from quarantine control after they have been processed, and are packaged for delivery into the retail or hospitality supply chain as a chip, hash brown or crisp.

The potato industry in Australia

Potato production accounts for 20% of all vegetable production in Australia. For 2010-11, the annual production was valued at $480 million, with processing accounting for 56% of the value chain, fresh potatoes accounting for 36% and seed potatoes accounting for 8%.

Potato production in Australia grew exponentially from 1861 to the late 1990s before steadying at current levels of 1.3 million tonnes over the last few years. Notably, in this period the area under cultivation has been relatively stable with the only significant change in area occurring around 1945.

At state level, potato production and area of cultivation patterns have changed little in recent times. South Australia was the largest potato producer at 359 thousand tonnes in 2010, followed by Tasmania at 333 thousand tonnes and Victoria at 255 thousand tonnes.

Role of the Department

The Department of Agriculture, Fisheries and Forestry is responsible under the *Quarantine Act 1908* to issue permits to enable safe importation into Australia. In deciding to issue a permit, DAFF must consider the level of quarantine risk. In doing so DAFF undertakes biosecurity risk assessments to determine the measures necessary to manage the risks to Australia from pests and diseases that may be associated with imported commodities.

Australia's biosecurity policies are driven by Australia's legislative requirements, international obligations and commitment to have in place effective and scientifically valid measures that support the safe movement of goods around the world – both imports and exports. To ensure consistency Australia has agreed, like all other countries that are members of the WTO, to assess import risk based on scientific principles (SPS Agreement)[2].

[2] See Articles 2.2 & 5.2 of the Agreement on the application of Sanitary and Phytosanitary measures (SPS Agreement)

Risk and how it is estimated

Explanation of risk

Risk consists of two parts;

- how likely an event is to occur, and if it did,
- what happens (the size of the consequence).

Based on this definition of risk, events that may cause a high consequence and are likely to occur, have a high risk. If an event has a high consequence, but is unlikely to occur it would have a lower risk.

This concept is illustrated in figure 1. For example, an event 'A' that occurs at certain probability and consequence could be considered to have a low risk that is of less concern (see point 'A' that is in the green area = low risk). An event with the same probability, but with a greater consequence, is now considered to have an unacceptable risk (see point 'B' that occurs in the red area). An event with the same consequence as point 'B' but with a low probability of occurring could be considered to have a low risk (see point 'C').

This concept of risk is recognised by the WTO[3], International risk assessment standards[4,5] and nationally[6].

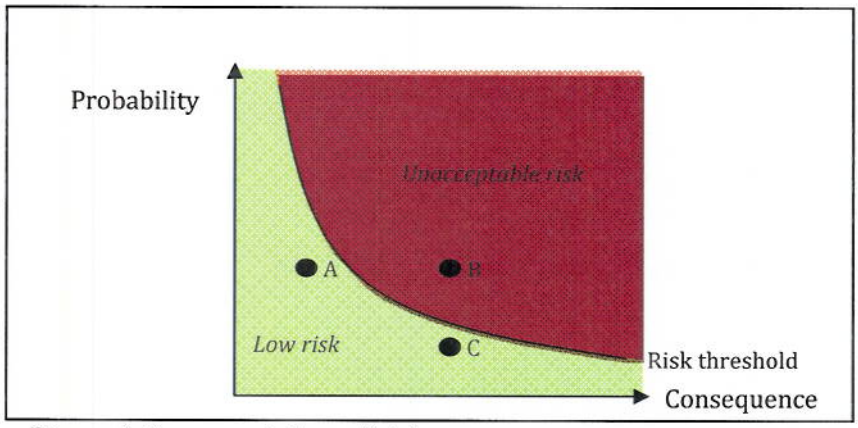

Figure 1 Representation of risk

Risk Estimation Matrix

A risk estimation matrix is a standard method of combining how likely an event will occur with the consequence of that event. A simple risk matrix from Standards Australia is presented in figure 2.

A concept taken into account by a risk matrix is even if an event is unlikely to occur, if the consequences are expected to be large, then this event may still be considered important. In the example risk matrix represented in figure 2, an 'improbable' event combined with a 'major' consequence results in a medium risk.

[3] See Annex A s4 of the SPS Agreement

[4] See Pest risk assessment; Glossary of phytosanitary terms: International Standards for Phytosanitary Measures 5 (ISPM 5)

[5] Pest risk Analysis for quarantine pests including analysis of environmental risks and living modified organisms: ISPM 11

[6] See HB 436:2004 Risk Management Guidelines: Companion to AS/NZS 4360:2004. Standards Australia

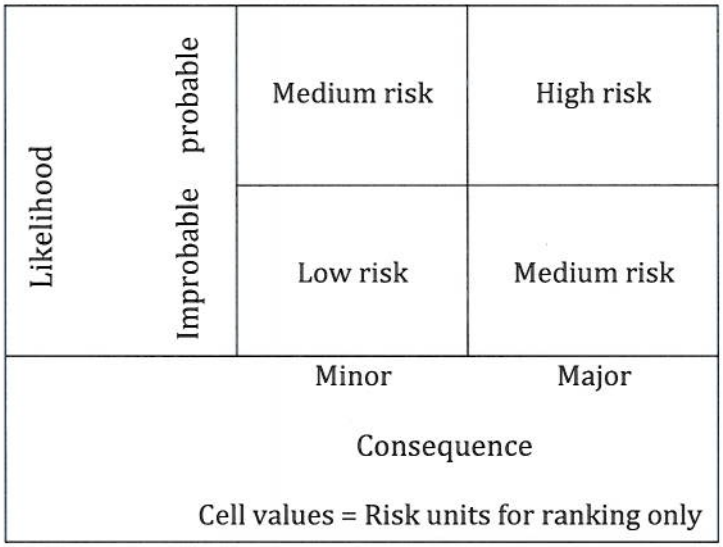

Figure 2 Risk estimation matrix[7]

The Australian risk estimation matrix (see table 1) is consistent with the concept of risk illustrated in figure 1 and the estimation of risk in figure 2. The Australian risk estimation matrix combines the likelihood an event will occur with the consequences of that event. For example, when the likelihood of an event occurring is 'very low' and the consequences are considered to be 'moderate', an overall risk of 'very low' is estimated. To reflect Australia's stringent approach to biosecurity, the Australian risk estimation matrix is biased to place additional emphasis on events that may have a 'high' consequence. For example, if the consequences are considered 'high', the likelihood of an event occurring would need to be 'extremely low' for the risk to be estimated as 'very low'.

Table 1 Australia's risk estimation matrix

Likelihood of pest entry, establishment and spread	Consequences of pest entry, establishment and spread: Negligible	Very low	Low	Moderate	High	Extreme
High	Negligible risk	Very low risk	Low risk	Moderate risk	High risk	Extreme risk
Moderate	Negligible risk	Very low risk	Low risk	Moderate risk	High risk	Extreme risk
Low	Negligible risk	Negligible risk	Very low risk	Low risk	Moderate risk	High risk
Very low	Negligible risk	Negligible risk	Negligible risk	Very low risk	Low risk	Moderate risk
Extremely low	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Very low risk	Low risk
Negligible	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Very low risk

Australia's risk assessment method has been used since 2001. The risk estimation matrix was endorsed at the Primary Industry Ministerial Council on 2 May 2002:

[7] See figure 6.1, HB 436:2004 Risk Management Guidelines: Companion to AS/NZS 4360:2004. Standards Australia

'The work done to date on the policy framework surrounding ALOP [appropriate level of protection] including practical guidelines for risk analysis which illustrate the concept by way of a risk estimation matrix adequately meets Australia's present needs and further work on this definition is not a PIMC priority'.

Australia's ALOP is represented as 'providing a high level of sanitary and phytosanitary protection aimed at reducing risk to a very low level, but not zero'[8]. This definition of ALOP was first stated in the 2003 Import Risk Analysis Handbook. Australia's risk estimation matrix is consistent with Australia's definition of ALOP. Past inquires into Australia's biosecurity regime have recognised that it is impossible in practice to operate in zero-risk. In 1979, the Senate Standing Committee on Natural Resources stressed that there is no such thing as a zero-risk quarantine policy, and it believed that Australia's approach should be better described as 'scientific evaluation of acceptable risk'.

In May 2007, the Federal Minister for Agriculture released the Future Harvest report[9] that re-affirmed Australia's ALOP is set at 'very low' and is therefore consistent with Australia's risk estimation matrix.

Australia's risk assessment methods were considered during the WTO dispute on New Zealand apples[10]. Although the WTO dispute panels found fault with Australia's overly conservative interpretation of risk in the apple IRA, they did not find fault with the matrix[11,12].

Australia's risk assessment method, including the estimation matrix, is used by Plant Health Australia and affiliated industries, including the potato industry, in assessing risk within their Industry Biosecurity Plans[13].

Consequences (community effects)

The requirements for assessing potential consequences are given in Article 5.3 of the SPS Agreement[14], ISPM 5[15] and ISPM 11[16]. Australia assesses these impacts at different scales including local impacts at the community level. In considering the potential consequences of a pest establishing in Australia, many factors are taken into account. These include effects on:

- Crop plant health
- Other plant health
- Eradication and control costs
- Domestic and international trade
- Environmental and non-commercial

[8] See Annex 3 Import Risk Analysis Handbook 2011.
[9] See p15 of Future Harvest: The way ahead for Australian Agriculture and food.
[10] See WTO DS367-12 Replies from the scientific experts to questions posed by the Panel
[11] Report of the Panel, WT/DS367/R
[12] Report of the Appellate Body, WT/DS367/AB/R
[13] National Potato Industry Biosecurity Plan, May 2007, Version 1 and draft Industry Biosecurity plan for the potato industry, Version 2, 2012 or 2013.
[14] See Article 5.3 of the SPS Agreement
[15] Glossary of phytosanitary terms: ISPM 5
[16] Pest risk Analysis for quarantine pests including analysis of environmental risks and living modified organisms: ISPM 11