

Risks for New Zealand's biosecurity from internet trading of plants

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Summary The growing volume and speed of on-line trading of plant materials poses a significant threat to biosecurity worldwide. In New Zealand the detection beyond the border of plant materials associated with national and international internet trade is increasing. This includes imported products that have escaped detection at the border but also local trade in plants that are regulated within New Zealand. A summary of internet-related post-border interceptions of risky commodities and risk organisms from the last five years is presented along with case studies highlighting potential impacts to the environment and economy, and the key points of intervention to manage those risks.

Keywords Biosecurity, internet, seeds, plants, on-line trading.

INTRODUCTION

The New Zealand Ministry for Primary Industries (MPI) has a challenging mandate to manage the biosecurity risks posed to New Zealand, while ensuring that the economic benefits of trade and travel are maintained. MPI views the border as one element in a broad biosecurity management system in which risk management activities occur off-shore, en-route, at the border, and within New Zealand (post-border). It collaborates with government agencies, local government and industry representatives to protect New Zealand against biological risk. This paper explores the threat posed to New Zealand by the growing volume and speed of trade in plant materials where the commerce has been initiated on-line. This is an emerging issue for biosecurity regulators worldwide.

REGULATORY TOOLS AVAILABLE

Post-border exotic pest and disease incursions pose serious threats to New Zealand's economy, environment, health and cultural identity. Four key tools used to mitigate risks are:

The Plant Biosecurity Index (PBI) The Plant Biosecurity Index is a list of the plants that are already present in New Zealand, and for which an Import Health Standard (IHS) exists. Species not listed on the plants biosecurity index are not eligible for import into New Zealand for propagation purposes as they are not covered by a valid import health standard, the biosecurity risks have not yet been assessed, or they

are new organisms. New Organisms may only be imported through the border clearance process following risk assessment under the Hazardous Substances and New Organisms (HSNO) Act 1996.

Import Health Standards and phytosanitary certificates

All plant products imported into New Zealand must comply with the requirements of relevant Import Health Standards. The Standards are documents issued under Section 22(1) of the Biosecurity Act (BA) 1993. They state the requirements that must be met before risk goods can be imported into New Zealand. They specify the phytosanitary requirements (such as inspection, quarantine or treatment) that must be met for plant material to be given biosecurity clearance to enter. Phytosanitary certificates must contain all the information detailed in the International Standard for Phytosanitary Measures issued by the National Plant Protection Organisation (NPPO) in the country of origin, certifying that plant material has met all requirements meeting official procedures and found to be free of any visually detectable regulated pests, and conforms to New Zealand's current import requirements.

Imports of 'seeds for sowing' are subject to risk management measures for specified pests and diseases known to be associated with the commodity in the country of origin. Required measures take into account the status of the risk organism, the likelihood of entry and/or establishment in New Zealand and consequent impacts. Imports of seed products (e.g. packets of seeds, growing kits, and seeded ornamental paper) for propagation must meet the individual import requirements for each type of seed as specified within the IHS. For seed products that also contain organic growing media (e.g. coir fibre/coco peat, processed plant products), the medium must also meet the requirements specified in the relevant IHS.

National Pest Plant Accord (NPPA) Many significant weeds are present in New Zealand but are limited in distribution. Some of these species have ornamental value. The NPPA is a non-statutory cooperative agreement between the Nursery and Garden Industry and the regional and central government departments that have biosecurity responsibilities and aims to contain those weeds within the current distribution. The plants listed

in the NPPA cannot be sold, propagated or distributed in New Zealand.

Post border operations Investigation and management of accidentally or illicitly imported weeds, pests and diseases that have been detected beyond the border.

RISKS ASSOCIATED WITH ON-LINE TRADING

There are three major sources of risk associated with on-line trading in plant materials:

Importation of prohibited plants There have been an estimated 20,000 exotic plant species introduced into New Zealand since European settlement in the early 19th century of which over 2000 have naturalised. The majority of New Zealand's recently naturalised plant species originated as ornamental garden plants, and many are known to have serious, deleterious impacts on native flora and fauna (Sullivan *et al.* 2005). The importation (as seeds) of plants not already present in New Zealand adds to that risk.

Risks from pests and diseases associated with illicitly imported seeds Perhaps more importantly, importation of seeds without inspection at the border risks the introduction of associated pathogens and pests that could adversely affect crops and native habitats. Before clearance and delivery to the buyer in New Zealand, goods ordered overseas should be inspected at the border to check for adherence to IHSs and for the presence of a phytosanitary certificate where one is required.

Spread of regulated weeds Many plants that pose a threat to New Zealand ecosystems are attractive and are valued as ornamentals. On-line trading in such plants increases the risk that these weeds will become more widely established. Aside from plant biosecurity risks, on-line ordering poses similar difficulties for organisations regulating the importation of animal products (such as skins and feathers), animal remedies, pharmaceuticals, traditional Chinese medicines (TCM) and the trade in endangered species (CITES) and others.

THE INTERNET TRADE IN PLANTS

On-line auctions of regulated items such as seeds, plants, and plant products need to be constantly monitored to avoid these risks. In 2013 investigations of on-line activity made up 4.1% of all post-border investigations compared with 1.3% in 2012. It is simple to order seeds of almost any plant from overseas sources with the click of a mouse. Many of the products have

been sourced directly from overseas on-line trading sites such as eBay.com, amazon.com, AliExpress.com (China), Flowerseeds.co.nz (Italy and Greece), and Alibaba.com (China). MPI investigates when such non-compliance is reported. Most investigations (Table 1) relate to buyers who receive non-compliant seeds or other risk goods purchased from on-line sites overseas which have not been inspected at the border. These shipments are either broken down for resale on local sites, or grown for resale as plants. In most instances the buyer is ignorant of the PBI and IHSs, taking the stance that as the consignment was not intercepted at the border, however it must comply with regulations. We believe the increase in the number of investigations in 2013 and 2014 is related either to the growth in volume of on-line trade, increased awareness of reporting border non-compliance, or a combination of both.

Table 1. Investigations involving importation of risk organisms initiated through e-commerce.

Year	09	10	11	12	13	(May) 14
Seed products	1		2	2	9	7
Plants				2	4	
Aquatic plants		2	1	1	5	
Plant products					1	
Total	1	2	3	5	19	7

More and more cases of sales of illegal organisms are appearing on on-line trading sites in New Zealand such as Trade Me and Facebook. For example, the prohibited aquatic alga *Aegagropila linnaei* Kützing formally known as *Cladophora aegagropila* (L.) Rabenhorst (Cladophoraceae; marimo moss balls) was illegally imported in 2011 and was sold for use in aquaria. The trade was stopped and the trader was prosecuted under the BA and HSNO. Dispersal and subsequent establishment of this species could have environmental consequences. For example, the fresh water alga *Didymosphenia geminata* (Lyngbye) M.Schmidt, 1899 (Gomphonemataceae; didymo) became invasive in New Zealand recently with management costs exceeding \$1.1 million annually. There was also an unknown risk of unwanted pests and pathogens hitch-hiking on the plants such as other species of algae, snails, snail eggs, leeches and worms.

In other examples, undeclared importations of strawberry (*Fragaria* sp.; Rosaceae) and tomato (*Solanum lycopersicum* L.; Solanaceae) seeds have been

intercepted. The IHS for seeds for sowing (Standard 155-02-05) specifies that there are five regulated seed-borne viruses of strawberry and three regulated viruses of tomato, diseases that are absent from New Zealand. The IHS requires that strawberry plants must be grown in quarantine for at least six months with frequent inspections to eliminate disease risk. Incorrect importation of seeds bypasses these safeguards. Strawberry, tomato and rose seeds have been imported in bulk for re-sale on the trading site Trade Me. Trade Me has been working with MPI to help reduce the future sale of imported goods posing a biosecurity risk.

Monitoring the resale of imported plants or seeds through advertisements is straight forward, but it is very difficult to know the scale of importations for personal use. Recently MPI was informed of 17 packets of seeds imported directly from AliExpress for personal use that crossed the border without inspection. The importer, who had subsequently sown the seed in seed trays in preparation to stock his garden, was told by a friend that plant material growing without biosecurity clearance was illegal. The importer voluntarily delivered the entire consignment of seeds, along with seed trays, soil and germinating seedlings to MPI for destruction to mitigate all risk. Without this co-operation MPI would not have been aware of this breach of IHSs.

The volume and speed of internet-based trading is increasing rapidly and express freight (i.e. courier) is becoming the dominant delivery method. MPI prioritises and targets resources at the importation pathways that are most critical, while ensuring risks are still managed across all pathways. However not every item crossing the border can be checked. MPI has a sophisticated approach to monitoring the content of incoming international mail including intelligence, X-ray image analysis and detector dogs. International mail arrivals have decreased by 18% (7.9 million) over the past five years. At the same time the importation of items through the express freight pathway has increased dramatically. In 2010/11, 1.8 million items arrived via express freight, a 9.5% increase from 2009/10. Express freight differs from mail as MPI treats it as cargo. This transition is posing a major challenge for MPI's border clearance policies and operations. Pressures include:

Short delivery time frames offered by the shipping companies and expectations of performance by the consignee. As the express freight pathway becomes the transport method of choice this risk increases.

The express freight pathway into New Zealand is subject to the deliberate inaccuracy of consignment declarations. Inadequately and erroneously declared items may circumvent the border biosecurity system.

Websites with domain names that imply domicile in New Zealand (e.g. Flowerseeds.co.nz) but which supply the commodity directly from an overseas country further test the resilience of border services.

The future challenge for MPI is to apply good inspection regimes which do not affect legitimate business practices.

Local on-line trading of plants already present in New Zealand but listed under the NPPA also poses a biosecurity risk. Recent examples include sales of *Datura metel* L., *Passiflora* species, *Drosera capensis* L., *Equisetum* species, palms and *Salvinia molesta* D.Mitch.; all species listed on the NPPA. Detecting these non-compliant sales requires frequent manual searches of local on-line trading sites for names of plants listed on the NPPA. There are insufficient resources available at present to complete these searches systematically. As a result, the degree of environmental exposure to this risk is uncertain.

EMERGING RISKS IN NEW ZEALAND

Receipt of goods sourced on-line from overseas has become even easier with the launch of the New Zealand Post YouShop service. Local goods can be received at an address in the United States of America or in the United Kingdom to process, store and repack (if applicable) items for shipment to a delivery address in New Zealand. The onus is on the customer to accurately complete a customs declaration prior to shipment, not the supplier. New Zealand Post are not held accountable for any seizure, detention or other actions by any Regulatory Authorities involving items that are illegal or prohibited by law, whether in the United States of America, the United Kingdom or in New Zealand. New Zealand Post is currently negotiating with Alibaba.com to open up trade lanes to New Zealanders who shop on-line with the Chinese on-line giant. Last year Alibaba recorded more transactions than Amazon and eBay combined. International off-shore stores are an increasing problem especially as New Zealand's biggest on-line trader, Trade Me, is accepting listings from several Australian and United States of America retail chains direct selling through the website. Trade Me have confirmed that the international sellers and the type of product they intend to sell will undergo intensive vetting before approval to trade on the site is permitted and will agree to a code of practice that includes compliance with biosecurity legislation. MPI has built a good relationship with Trade Me to now have the ability to terminate auctions by stating the regulatory requirements covering the organism in question.

DISCUSSION

Establishment of significant new diseases, pests or weeds via the e-commerce pathway would threaten growth in the value of New Zealand's primary products and the sustainable use of natural resources. The importation and distribution of seeds or seed-bearing goods through on-line trading sites is a persistent, and a growing issue. In each case, there are associated risks of the introduction of new weed species or pests and diseases associated with seeds. Mitigation of risks is likely to require systematic monitoring by MPI, as well as self-regulation by New Zealand's on-line sites. Future actions require a proactive approach which will ultimately result in less expenditure for eradication programs.

Within the mail and express freight pathway, risk is identified and resources and appropriate interventions are initiated. Risk-profiles are being gathered so that MPI can then prioritise and target resources on the areas that are most important. Despite these initiatives, there remains a significant risk that risk goods and risk organisms are being introduced to New Zealand without appropriate border clearance. The quantum of risk has as yet to be assessed adequately.

New Zealanders have a pivotal role to play in Biosecurity, and empowering the public to do the right thing when trading on-line or receiving gifts from abroad has potential to make a substantial difference. Effective programmes that engage the public and invite and encourage appropriate behaviours are vital. A well educated public that knows what to do without the threat of legislative action would be a very desirable outcome. Education of members of trading sites is an important starting point.

This presentation has concentrated on the biosecurity issues developing within New Zealand, but this is a problem for all trading nations. The International Plant Protection Convention (IPPC) recently reported desktop research in Australia and the United States of America into the huge scope of risky products, sources and trade pathways involved in e-commerce (IPPC 2012). The report recommended increased vigilance from member countries, better interception at the border and targeted communication and education as

key responses to this threat. It also recommended an international response through the IPPC to develop common principals for dealing with the internet trade in plants and plant products (IPPC 2012). Sharing information between countries is likely to improve intelligence on these practices. MPI is now developing linkages with the United States of America authorities charged with investigating biosecurity issues arising from on-line trading in order to share information and tools for combating non-compliance. There is a high level of common ground in our approaches to biosecurity incursions/interceptions and how to address them. There has been recent interest from Canadian and South African authorities keen to share in this process.

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REFERENCES

- Biosecurity Act (1993). <http://www.legislation.govt.nz/act/public/1993/0095/latest/DLM314623.html> (accessed 12/5/2014).
- Hazardous Substances and New Organisms Act (1996). <http://www.legislation.govt.nz/act/public/1996/0030/latest/DLM381222.html> (accessed 12/5/2014).
- Import Health Standards: <http://www.biosecurity.govt.nz/files/ihs/155-02-05.pdf> (accessed 12/5/2014).
- IPPC (2012). The Internet Trade (e-Commerce) in Plants: Potential Phytosanitary Risks, pp. 25. https://www.ippc.int/sites/default/files/documents/20130604/1332418083_draft_-_internet_trade_of_plants_201304232111en_2013060415%3A21--1.7%20MB.pdf.
- Plants Biosecurity Index: <http://www1.maf.govt.nz/cgi-bin/bioindex/bioindex.pl> (accessed 12/5/2014).
- Sullivan, J.J., Timmins, S.M. and Williams, P.A. (2005). Movement of exotic plants into coastal native forests from gardens in northern New Zealand. *New Zealand Journal of Ecology* 29(1), 1-10.