

Biosecurity New Zealand

Tiakitanga Pūtaiao Aotearoa

Protecting New Zealand:

An introduction to the world's best biosecurity system

Ministry for Primary Industries
Manatū Ahu Matua



Te Kāwanatanga o Aotearoa
New Zealand Government



A vital role

New Zealand's biosecurity system underpins trade, primary production and biodiversity – it helps guard our way of life. The biosecurity system allows New Zealand to safely move animals, plants and food within New Zealand and to and from other countries.

Biosecurity is important to New Zealand because, as an isolated country, it is free of many pests and diseases, it has unique biodiversity that is threatened by invasive species, and much of its wealth relies on trade and the primary sector.

New Zealand is recognised globally as an exemplar for biosecurity. Our actions have been successful in protecting New Zealand from incursions of almost all pests and diseases that could cause significant harm. We have prevented the establishment of several damaging insect pests like red imported fire ants and brown marmorated stink bug. The eradication of the pea weevil, Queensland fruit fly, southern saltmarsh mosquito and promising progress on eliminating *Mycoplasma bovis* are examples of how the biosecurity system is working well to reduce harm to New Zealand.

Biosecurity has been the top priority for the primary sector for 10 years in a row, according to the KPMG Agribusiness Agenda.

Why is biosecurity important?

The world is full of pests and diseases that are not in New Zealand. Biosecurity New Zealand does our best to keep them out, watch our for, and stamp out the most harmful ones that get through our defences. The biosecurity system is a net, not a wall.

The COVID-19 pandemic has shown how difficult it is to keep a disease out of New Zealand and eliminate it once here. New Zealand's biosecurity system faces many of the same challenges.

The main types of biosecurity risks facing New Zealand are pests and diseases that:

- **Would immediately restrict or stop exports:** There is an internationally agreed list of animal pests and diseases, including Foot and Mouth Disease, that if found in New Zealand, would immediately trigger other countries to restrict our meat, dairy and animal exports. There are also several insects like fruit flies and bark beetles that would similarly trigger restrictions on our exports of fruit and timber. Biosecurity New Zealand decides how to respond case by case, depending on the pest and the situation. The total impact of a Foot and Mouth Disease outbreak has been estimated in various reports as being between \$15 and 22 billion.
- **Are already in New Zealand causing harm:** The damage caused to native biodiversity by predators like possums and wilding pines is well known. Many weeds and aquatic pests are also either causing damage or will cause damage if they spread, like didymo and wallabies.
- **Threaten taonga species or natural ecosystems:** Several bird diseases could threaten unique species such as kiwi and kākāpō. A vast number of insects, fungi, bacteria and plant viruses also threaten native biodiversity, including Kauri dieback. There is often very little scientific information about these risks because most organisms are not pests in their home places.
- **Harm our primary sector productivity:** New Zealand is free of many of the diseases and insects that reduce pasture growth, animal health, fruit yield and forest value. Most of our avocado crop is grown from one variety, and 80 percent of our wine is based on sauvignon blanc, which makes them more at risk from diseases.
- **Affect human health and wellbeing:** The biosecurity system manages the transmission risk of pests and diseases from animals to humans (but not human to human). New Zealand is free of diseases like rabies that affect both animals and humans, and some species of mosquitoes and ticks that can transmit diseases between humans. Biosecurity New Zealand conducts surveillance for avian influenza in bird populations to quickly identify variants that could affect humans. We have eradicated southern saltmarsh mosquito, which could carry Ross River virus that is present in Australia.

Fruit flies



Fruit flies present a major threat to New Zealand's \$6 billion horticulture sector and home gardens. There are a range of different species including the well-known Queensland fruit fly, the Tau fly and the Mediterranean fruit fly. These pests eat most fruits and vegetables, severely damaging crops and limiting trade with many export markets.

Most countries harbour some species of fruit flies, but New Zealand is fortunate to be free of these pests. The different parts of the biosecurity system work together to manage the risk of the pest establishing here.

- New Zealand only accepts trade in fresh produce from countries it has formal agreements with, and various Import Health Standards are in place to ensure that imported fresh produce is free of viable fruit fly and their eggs.
- Screening the luggage of incoming international passengers at the border helps detect unauthorised fresh produce.
- Biosecurity New Zealand's surveillance programme watches for 100 species of fruit fly, including the Queensland fruit fly. More than 7,600 traps are set around the country, where pheromones are used to lure flies into the traps. Most traps are placed near airports, seaports, and densely populated areas, where flies would most likely enter the country.
- We have mounted a number of large-scale biosecurity responses in recent years to locate and remove populations of fruit flies discovered in the country. All have been successful, and the pests are not established here.

Speed matters – we need fast and close links between our border and our response teams.

Multiple layers of protection

The biosecurity system manages risk through multiple layers of protection that act like a series of nets. Biosecurity New Zealand manages as much risk offshore as it can. It screens all goods, craft and passengers that cross the border, and we have many activities within New Zealand to eradicate pests or reduce their harm. These layers are connected. One cannot operate successfully without the other.

Scientific expertise and analysis underpin every layer of the biosecurity system. The Ministry for Primary Industries has its own scientific capability and connects with other New Zealand and international scientists.



THE NZ BIOSECURITY SYSTEM

Hinaki nets – showing layers of risk management

OUR OUTCOMES



Our biosecurity system is stronger, including our own business processes



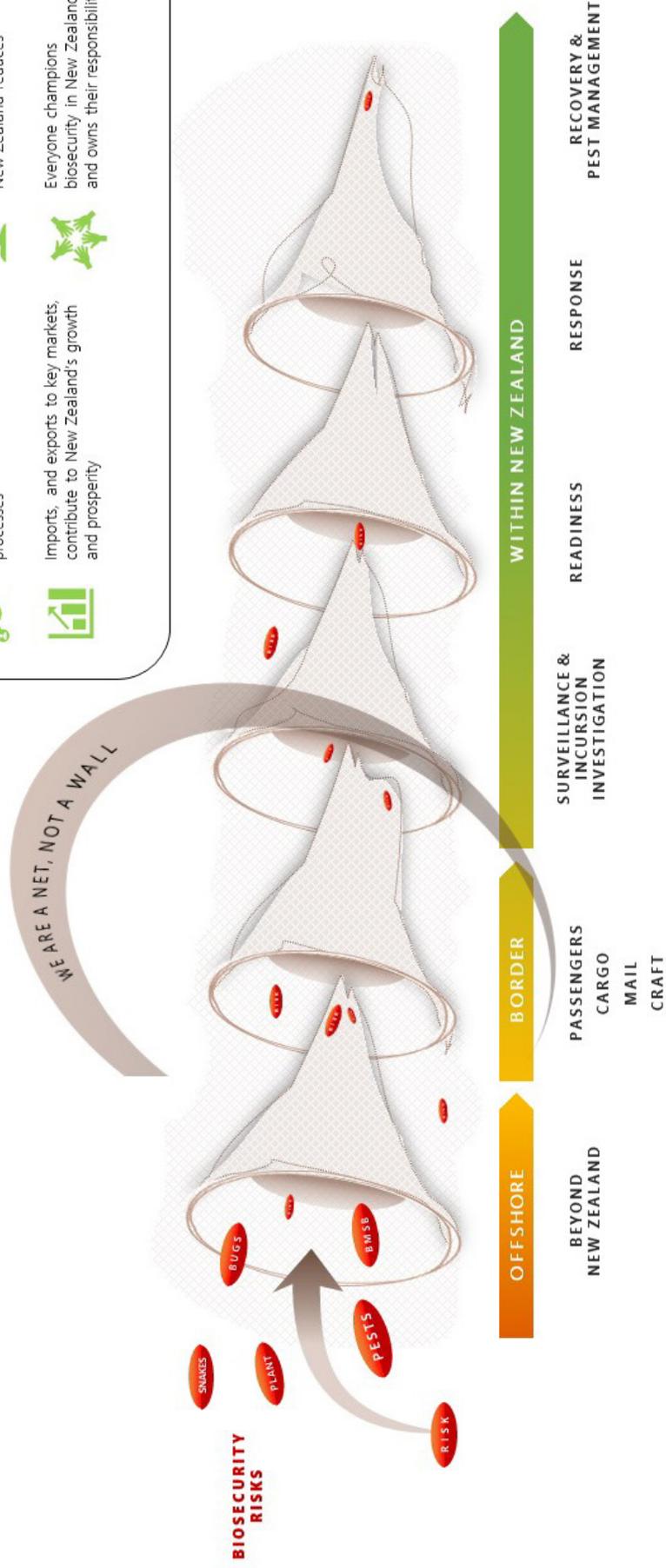
The impact of harmful pests and diseases in New Zealand reduces



Imports, and exports to key markets, contribute to New Zealand's growth and prosperity



Everyone champions biosecurity in New Zealand and owns their responsibilities



Offshore

Biosecurity New Zealand manages as much biosecurity risk offshore as we can; we screen all goods, craft and passengers that cross the border; and we have many activities within New Zealand to eradicate pests or reduce their harm. These layers are connected. One cannot operate successfully without the other.

Most biosecurity risk associated with imports is managed by requiring specific rules or treatments before commodities, goods and craft arrive at the border. Setting these standards is the most significant component of biosecurity work to keep risk offshore.

We have a wide range of activities to keep biosecurity risk offshore as much as is possible and sensible by:

- influencing international and regional standards;
- trade negotiations with other countries;
- prioritising and assessing requests from other countries to allow trade into New Zealand for specific commodities;
- developing science- and risk-based requirements for imported products (called Import Health Standards);
- assessing new and emerging biosecurity risks through our international, intelligence, industry and science networks;
- sending assurance missions offshore to check trading partners understand and are complying with import requirements;
- inspecting some products offshore;
- monitoring and reporting problems to trading partners and requesting remedial action;
- building capacity in some trading partners (especially Pacific) to help them meet our biosecurity requirements; and
- refusing to give permits to import where we have concerns.

Clear and consistent requirements help enable trade and reduce the likelihood of harmful pests and diseases establishing in New Zealand.

International collaboration, the rules governing trade, and scientific risk analysis are fundamental to these functions.

Most biosecurity risk is managed before it arrives.

Brown marmorated stink bug



Brown marmorated stink bugs are a serious offshore threat to many horticultural crops. These stink bugs like to hide in cargo and other confined, dark spaces. This means they can inadvertently be transported to new countries with a wide variety of imported

goods. Biosecurity New Zealand and our partners have made significant efforts to keep them out of New Zealand, which have proven successful to date.

- New Zealand requires mandatory offshore treatment to ensure high-risk goods from countries with established stink bug populations arrive clean. The import rules target vehicles, machinery and parts from identified risk countries, and all sea containers from Italy during the stink bug season. Government-approved systems for new and used vehicles from Japan have also been successful in reducing finds in imported vehicles.
- Border officers are responsible for checking compliance with the new import rules. They

focus on high-risk cargo that could hide populations of these stink bugs. They take a hard line on cargo and vessels that do not comply with the rules or are found to be infested. Ultimately, Biosecurity New Zealand's border team can prevent a vessel from discharging its cargo and direct it to leave New Zealand.

- We have worked closely with Australian officials to develop the offshore treatment programme over recent years. The scheme aligns most offshore requirements and treatment protocols between both countries for targeted commodities. These actions helped reduce the number of stink bug interceptions by 73 percent in 2019/20 compared with previous seasons.
- An awareness campaign (jointly funded by industry and government) encourages the public to keep watch for these stink bugs. There was a record number of calls to New Zealand's pest hotline during the 2019/20 season.
- Industry and government have also worked together to develop a post-border surveillance programme.



Brown marmorated stink bug (*Halyomorpha halys*).
Approx 17mm long



Green vegetable bug (*Nezara viridula*).
Approx 17mm long



Brown soldier bug (*Cermatulus nasalis*).
Approx 15mm long



Pittosporum shield bug (*Montethiella humeralis*).
Approx 9.6mm long



Brown shield bug (*Dicyotus caenosus*).
Approx 10mm long

At the border

Biosecurity New Zealand's border officers manage biosecurity risks through four pathways that are entry points into New Zealand. Working closely with other parts of the system, they help protect New Zealand from a range of threats and keep pests and diseases out.

- **Cargo** – All cargo manifests are screened by the cross-agency Intelligence and Targeting Operations Centre, which decides whether any consignments have potential biosecurity risks. Around 5 percent of all cargo consignments arriving in New Zealand have biological material that needs to be assessed. These are directed to one of 4,200 places that have been approved as transitional facilities, where containers are inspected either by quarantine officers or authorised third parties.
- **Passengers** – All air and sea passengers are assessed and screened at international airports and ports by quarantine officers using a combination of passenger declarations, face-to-face questioning, x-ray machines and detector dogs. Passengers can be fined \$400 if they have risk material that has not been declared. The compliance rate for passengers is around 98.9 percent.
- **Craft** – All craft (planes, ships and yachts) arriving in New Zealand must send documents 48 hours before arriving so they can be assessed by border agencies. We can issue directions to manage risks before the craft arrives and we inspect all craft on arrival. In normal years, we expect around 3,000 craft arriving from international waters. New Zealand was the first country to apply biosecurity controls to ships' ballast water and biofouling.
- **Mail** – all mail arriving at the International Mail Centre in Auckland is assessed, screened and inspected by a joint agency team (with the New Zealand Customs Service and New Zealand Post), x ray screening and detector dogs. The compliance rate for mail is over 99 percent, with the main risks being seeds, animal products and wooden products.

All incoming goods, passengers, mail and craft are screened at the border.

Around 5 percent of all cargo consignments arriving in New Zealand have biological material that needs to be assessed by our border team. In 2018-19 we identified 169,000 consignments with potential risks and treated over 52,000 of them.

In a typical year, we seize over 3,000 kilograms of apples, 2,000 kilograms of oranges/mandarins, and over 1,000 kilograms of bananas in the passenger pathway.

In normal years, we expect around 3,000 craft arriving from international waters.

The compliance rate for mail is over 99 percent, with the main risks being seeds, animal products and wooden products.

Cucumber green mottle mosaic virus

This virus was intercepted at the border in December 2019. It affects pumpkin, squash, cucumber, watermelon and melons. It causes fruit drop, malformation and internal decomposition and reduces yields and value by up to 25 percent. It could threaten our squash and other crops that generated around \$80 million of exports in 2019.

- It was first discovered in Australia in 2014 and was covered by our Import Health Standards from 2016.
- Once it started spreading to crop-growing areas in Australia in 2018, we required imports of pumpkins and watermelons to come from pest-free areas, and in 2019 we updated our Import Health Standards based on a scientific risk assessment.
- Symptoms of the virus were detected on fresh melons at the border in December 2019 by trained quarantine inspectors.
- Samples were sent to Biosecurity New Zealand's laboratories for rapid diagnostics while the shipments were held at the border.
- We were able to confirm the virus, stop the shipment, and suspend imports of several varieties of fruit and vegetables from Queensland.
- Our diagnostic experts have been evaluating and auditing Queensland's pest-free area assessment system.



Images courtesy of Tera Pitman, University of California Davis

Within New Zealand

The layers of biosecurity protection within New Zealand include surveillance, investigations, contact tracing for cattle and deer, a strong readiness capability, pest management programmes, and systems to respond to incursions and stamp them out when possible.

Surveillance and incursion investigation

New Zealand has 20 targeted surveillance programmes focusing on specific pests, diseases and biosecurity risks using a partnership-provider model with industry and other agencies. One programme targets early detection of invasive ants at sites around New Zealand including seaports, marinas, airports and transitional facilities. During summer 2019/20, 13 exotic ants were detected in traps and eight established nests were found, all of which were successfully eradicated.

Readiness and response

Readiness works to improve the way we respond to threats to the biosecurity system. Readiness includes response planning (for threats like Foot and Mouth Disease), training responders, developing response systems and processes, and carrying out exercises to test response capability.

Pests and diseases sometimes get through the border.

Pest management

Pest management is about preventing or reducing the impacts caused by harmful organisms that are established in New Zealand. This includes animal, marine, freshwater and plant pests.

Pest management in New Zealand involves several government agencies, regional councils, industry, iwi/hapū and communities.

New Zealand has managed to eradicate several pests in recent years.

Pest	Eradication completed
Fall web worm	2004
Painted apple moth	2004
Asian gypsy moth	2005
Red imported fire ant	2009
Queensland fruit fly	2014, 2015, 2020
Southern saltmarsh mosquito	2010
Various termites	Various years
<i>Bactrocera facialis</i>	2019
<i>Culex sitiens</i> mosquito	2020
Pea weevil	2020

Mycoplasma bovis

One of our biggest biosecurity programmes is the *Mycoplasma bovis* programme. *M. bovis* is a cattle disease that causes serious illness, lameness and animal welfare problems. In 2018, the Government committed \$880 million over 10 years to eradicate this disease.

Three years on from *M. bovis* being first discovered in New Zealand, we are well on track to eradication.

As of December 2020, the disease has been confirmed on 260 properties and there are ten active properties. The number of properties under movement controls has reduced by 78 percent compared to the same time last year

Over two thousand farm properties have been subject to movement controls and disruptions, and over \$180 million has been paid in compensation.

While we are looking harder, we are finding less infection and we are identifying properties closer to the date they were infected, indicating there are less infected properties in the national herd and we are closer to the next phase of eradication.

While it is expected there will be sporadic cases identified during 2021, it is expected the programme will transition to a long-term surveillance phase during mid-2021.

In parallel, work has also been done to improve the user experience of and compliance with the National Animal Identification and Tracing system. Poor compliance with traceability requirements has considerably increased the difficulty of eradicating *M. bovis*.



MPI leads and integrates the biosecurity system

Biosecurity New Zealand is part of the Ministry for Primary Industries (MPI). MPI integrates the Government's biosecurity activities.

The Director-General of MPI has a statutory responsibility to provide overall leadership in activities that prevent, reduce or eliminate adverse effects from harmful organisms in New Zealand. The links with food safety, animal welfare, forestry, fisheries, agriculture, and trade are important for achieving MPI's outcomes around prosperity, sustainability, and protection.

MPI provides assurances about the pest and disease status of New Zealand's primary products to other countries. We are also involved in negotiating the biosecurity requirements imposed on exports by trading partners.

We also link with the Department of Conservation, regional councils, industry groups and various non-government organisations to detect, eradicate and manage pests and diseases that are already in New Zealand. We work very closely with other border agencies to ensure border operations are as efficient as possible while managing a wide range of outcomes.



Xylella fastidiosa (Pierce's disease or bacterial leaf scorch)

X. fastidiosa is a bacterium that affects over 400 plant species and stops water getting from roots to the leaves. It is listed as the highest impact pest for the New Zealand wine industry, and could also affect summer fruit and citrus. It has been found in New Zealand native plants growing in California and would suit the climate in most of New Zealand. Biosecurity New Zealand manages the risk through multiple layers, and the speed of communication between the layers is an important part of managing that risk.

- Biosecurity New Zealand has been involved in developing international standards for detecting *X. fastidiosa*, which the European Union is now asking us to use to prove that New Zealand is free from it. We also collaborate with Australia on best-practice diagnostics.
- There are measures against *X. fastidiosa* in our Import Health Standards for nursery

material and ornamental plants from high-risk countries, as well as against the insects that could carry it.

- Imported plant material is grown in post-entry quarantine facilities to check for *X. fastidiosa* before being released. These facilities are linked to our plant health laboratories so any symptoms can be tested quickly and diagnosed accurately.
- Biosecurity New Zealand has an ongoing surveillance programme around high-risk sites that checks for symptoms.
- *X. fastidiosa* is part of the readiness programme with the horticulture industry.

The links across all these systems mean Biosecurity New Zealand can respond quickly. An outbreak in Europe in 2013 was not contained quickly enough to prevent enormous damage.



Image courtesy of Camille Picard (DGAL-SDQP, FR)



Image courtesy of Baldissera Gioviani (Euphresco)

Together, the layers of the
biosecurity system protect
New Zealand from pests
and diseases.

