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Tools to do the job

Animal identification system proposed

FMD vaccine supply secured

Wood packaging rules

Biosecurity magazine

Biosecurity is published six-weekly by Biosecurity New Zealand, with regular input from the Department of Conservation, Ministry of Health, Ministry of Fisheries and regional councils. It is of special interest to all those with a stake in the protection of New Zealand's economic, environmental and social assets from the dangers posed by pests and diseases. Animal welfare issues are also covered. The articles in this magazine do not necessarily reflect government policy.

For enquiries about specific articles, refer to the contact listed at the end of each article.

General enquiries (e.g. circulation requests or information about Biosecurity New Zealand):

Biosecurity Magazine, Biosecurity New Zealand, PO Box 2526, Pastoral House, 25 The Terrace, Wellington, New Zealand.

Phone: 04 819 0100

Fax: 04 474 4257

Email: biosecurity@maf.govt.nz

Internet: www.biosecurity.govt.nz

Editorial enquiries:

Editor: Phil Stewart

Phone: 04 384 4688

Email: biosecurity@wordpict.co.nz

ISSN 1174 – 4618

Biosecurity New Zealand fax contacts:

Policy and Business: 04 819 0731

Animal Welfare: 04 819 0728

Pre-clearance: 04 819 0733

Post-clearance: 04 819 0736

Compliance and Enforcement: 09 300 1021

Incursion Investigation and Reference Laboratories: 04 526 5601

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editorial

Jeff Trevella

Having the right tools for the job

Our front-line inspectors are the most important people in the MAF Quarantine Service. We rely on them to keep watch at our borders for the risk materials that threaten the things we love most about this country – its flora, fauna lifestyles and landscapes.

If they are to do the job we expect of them, we have to give them the right tools and technology, the right processes and procedures, and the right organisational structures.

The last four years have seen significant change to operational requirements across all parts of the Quarantine Service, including major increases in passenger loadings, cargo volumes, regulatory requirements and associated border control processes. There are currently a number of projects – some in the early stages, some more advanced – under way within the Quarantine Service to re-equip our inspectors to face the border control challenges arising from these changes.

This work includes the implementation of our Information Solutions Strategic Plan. This involves mapping our business processes with a view to reviewing the way we work in some areas, including the introduction of new IT systems. We have already seen positive results of such work at our international mail centre and air cargo operations. If we can continue these successes, we will free up more time for our inspectors to focus on their fundamental role: managing biosecurity risk at the border.

Also on the technology front, we are in the process of equipping inspectors of used imported vehicles with PDAs. This allows them to record and collate information more efficiently in the field. We are also investing heavily in research and development. For example, together with Biosecurity New Zealand, we have been trialling videoscope technology as a clearance tool for used imported vehicles. This equipment uses a fibre-optic flexible shaft tipped with a micro-camera to explore behind panels and into deep recesses that wouldn't usually be checked using visual inspection techniques. 'Sniffer technology', which detects odours of at-risk materials in shipping containers, is another line of inquiry. We are also working with other border agencies to assess biometric tools, such as iris scanning, to facilitate the processing of passengers at airports.

In addition to new technology, we have initiated our Capability Project to give us more flexibility in how we resource our business in these changing times. This work focuses on providing inspectors with relevant training and a competency-based framework. Our vision is to develop a professional inspectoral workforce that can move from one area to another, and is competent and capable in all of those areas. Such flexibility entails moving away from discussions about what various job titles mean and, instead, having a situation where we know people are competent to recognised standards.

At the same time, we have just restructured our management team with the aim of clarifying our reporting lines and enabling a greater focus on the operational side of the business. As a result, our planning functions are now based in a stand-alone unit, a move that has also given us better ability to plot the direction of our business. The new structure also reflects the fact that 75 percent of our business is in Auckland and, consequently, this area needs appropriate resourcing.

That is just a quick snapshot of some of the initiatives under way in the MAF Quarantine Service. I have every confidence that they will bolster our inspectorate capability and translate into benefits for both the nation's biosecurity and our valued customers.

■ Jeff Trevella
Strategic Development Manager
MAF Quarantine Service

The tools for the job

In this issue we look at the tools we employ to protect New Zealand's biosecurity. These come in many forms: technology at border control points (p3); risk analysis (p4); vaccine supplies (p9); a high-tech incinerator (p14); sophisticated modelling, DNA analysis, stable isotope tools and sterile insect techniques in the fight against exotic moths (p16); the "Better Border Biosecurity" suite (p20); distance diagnostics (p22); and Wallaceville's incursion response and animal disease diagnostic capabilities (p24).

Risk analysis: first tool in the biosecurity kit

Risk analysis for the Malus *genera, such as apple budwood, has a very wide scope covering multiple species and countries.*

Each year, New Zealand imports nearly $8 billion worth of products. A significant proportion of these imports are 'biosecurity risk goods', and we must set standards to manage the biosecurity risk they present.

Under the Biosecurity Act 1993, risk goods are broadly defined as anything that could be reasonably suspected to constitute, harbour or contain an organism that may cause unwanted harm to natural and physical resources or human health. An import health standard (IHS) is needed to import these goods. Development of an IHS has two major phases:

- risk analysis
- preparation of a standard(s).

Risk analyses are carried out by the Risk Analysis Group in the Pre-clearance Directorate of Biosecurity New Zealand. This small group of five veterinarians, eight plant specialists and five environmental (terrestrial and aquatic) and human health experts work across the biosecurity system. They contribute to risk assessments for both new incursions and established pests. Most of their work, however, is focused on preventing new unwanted organisms arriving on imported goods.

This step in IHS development can take time and resources as MAF assesses:

- what organisms are likely to enter via a particular commodity or pathway
- the likelihood of organisms entering with these goods
- the consequences to New Zealand's unique flora and fauna, people, cultural and social values, and to our economy.

Broad scope means more analysis

Completing a risk analysis presents many challenges, which can affect how long it takes. The scope of the analysis (i.e., what is being assessed) is important. Generally speaking, the more specific the scope, the smaller the project is likely to be. For example, a current risk analysis for *Malus* genera (e.g., apple) budwood imports into New Zealand has a large scope because it covers several species of *Malus* from all countries in the world. This has meant scanning the literature and pest lists worldwide to assess a large number of potentially unwanted organisms (there are nearly 1500).

A review of an existing standard – such as this one where there are potentially 1500 pests to assess – can be streamlined to focus on the worst pests or on a particular class of organisms such as viruses.

An example of a more specific scope is aubergines from Samoa – one type of fresh produce from a single country. This narrows the potential list of organisms for assessment, but also means further assessment would be necessary to import the same commodity from a new country to ensure no further pests are present in these new countries.

International standards available

MAF can also choose to base preventative measures on international standards if it considers they are sufficient to meet the required level of protection. This can reduce the time taken to develop an IHS. But there are not many international standards, and the health status of our plants and animals may differ from other countries, so specific measures based on our own risk analysis may be required.

Other situations where we might use international standards as a basis for our measures include:

- protocols to prevent the international movement of mosquitoes dangerous to human and animal health which are available, widely understood and implemented
- ballast water standards in sea-going vessels. An international standard in bio-fouling on the hulls of vessels would make significant improvements to managing risks of invasive species in the marine environment.

Amount of information

Another important factor in risk analysis is the amount of scientific information available. For example, sheep, cattle and poultry have a large amount of high-quality information already accepted internationally, compared with cage birds such as finches, where there is relatively little information available.

Sources of good quality, internationally accepted information include:

- internationally agreed standards such as in the World Organisation for Animal Health (OIE) animal health codes and testing manuals and international standards for phytosanitary measures (ISPMs)
- published risk analyses and trading protocols from a country that New Zealand routinely trades with
- published reference texts and peer-reviewed scientific journals and research conducted by reputable institutions.

New-to-science challenges

There are also challenges around assessment of species or their pests and diseases that are new to science. This is a particular problem in the marine and freshwater environments. Occasionally, there may be new plant species identified, such as Wollemi pine – a critically endangered Australian tree that is currently under risk analysis to import material into New Zealand.

Uncertainty always exists

The more technical information that is available, the greater certainty there will be about conclusions in the analysis. But there will always be uncertainty, particularly around the potential impacts of unwanted organisms on our native flora and fauna. Predicting these can be very difficult. Where missing information might be critical to our decisions or needed to test critical assumptions in a risk analysis, then further research may be needed. A precautionary approach is usually taken in the meantime. Under the World Trade Organisation Sanitary and Phytosanitary agreement (SPS agreement), we can take a precautionary approach to decisions in the face of uncertainty. However, this must be accompanied by an active pursuit of further information to address this uncertainty.

Public interest can be high

All risk analyses are internally and externally peer-reviewed by experts, then undergo public consultation. Public interest in a proposed IHS can be unpredictable and may influence the amount of time taken in consultation. There was strong public interest in import requirements for genetically modified grains and seeds, highly pathogenic avian influenza (bird flu), food safety issues such as bovine spongiform encephalopathy (BSE, or mad cow disease) and salmonella in poultry products. There are often conflicting viewpoints from stakeholders.

The level of risk that is acceptable varies between individuals, within and between organisations and stakeholders and even between countries, and is managed on an import-by-import basis. The acceptable level of risk for New Zealand for each import is based on the available science and using a process of expert peer review and public consultation to ensure we have considered all relevant information. Ultimately, though, MAF makes that decision on behalf of all stakeholders based on best available science (some of which will be conflicting) and expert opinion.

SPS framework for fair decisions

New Zealand's economy relies heavily on our ability to trade – to export our products. An international rules-based trading environment is essential to us doing that in a fair and equitable manner. The SPS agreement provides that framework.

The ultimate test of our decision-making is a dispute action under the World Trade Organisation. If we set a precautionary stance in the absence of sound argued logic and without active pursuit of the missing information, we open ourselves up to dispute or countries taking retaliatory action against export of our products.

■ www.biosecurity.govt.nz/sps/agreement/index.htm

Aubergines from Samoa: specific scope for risk analysis.

Avian influenza surveillance stepped up

Avian influenza, Influenzavirus type A, is a disease of birds. It is an extremely contagious infection affecting all bird species. Influenza viruses include a large number of different virus subtypes and strains, and certain subtypes are categorised as highly pathogenic (HPAI) or of low pathogenicity (LPAI) on the basis of the severity of clinical signs in chickens.

LPAI viruses may cause mild or no clinical disease in chickens, and are of little concern to human health. Highly pathogenic subtypes arise by antigenic drift (mutation), re-assortment and recombination of the genetic material between different strains. Certain strains of LPAI virus of the H5 and H7 subtype have changed to become highly pathogenic avian influenza. Although not all H5 or H7 subtypes cause disease, all overseas outbreaks to date have been H5 and H7. This fact prompted the World Organisation for Animal Health (Office International des Epizooties, OIE) to designate H5 and H7 as notifiable avian influenza (NAI) and require reporting of these subtypes when found in poultry, regardless of their pathogenicity.

OIE surveillance guidelines for NAI and highly pathogenic notifiable avian influenza (HPNAI) country freedom were adopted in May 2005. No country has NAI freedom, and this is unlikely in future, but HPNAI country freedom is achievable. New Zealand is free of highly pathogenic avian influenza based on the absence of evidence in poultry, but at the moment it does not meet the OIE surveillance guidelines for positive evidence to substantiate its claim for freedom from either HPNAI or NAI. Therefore, Biosecurity New Zealand (BNZ) is increasing surveillance for avian influenza to meet the new OIE reporting requirements and demonstrate New Zealand's freedom from highly pathogenic notifiable avian influenza.

New Zealand's risk profile for avian influenza in bird populations, however, has not changed. The lack of migratory waterfowl and live bird markets makes New Zealand less at risk from H5N1 strains than virtually anywhere in the world. In fact, most would agree that humans represent the highest risk of introduction of H5N1 into New Zealand, either through smuggling risk goods, such as birds or poultry products, or being infected themselves in an H5N1 Southeast Asian strain-affected country.

All bird categories are to be covered in the surveillance programme.

Surveillance for avian influenza

BNZ commenced a comprehensive surveillance programme last month. The long-term objectives for surveillance in New Zealand are to:

(a) demonstrate country freedom from HPNAI

(b) demonstrate compartment freedom from NAI (all H5/H7 subtypes) in commercial galliforms (chickens and turkeys).

This ongoing programme will survey all bird categories: layer flocks, broilers, breeder chickens, backyard chickens, ratites, farmed ducks and geese, game birds and wild birds. It is an extension of the ongoing passive surveillance programme already in place, and will provide the evidence needed to demonstrate New Zealand's freedom from HPNAI to the OIE.

BNZ has been working with the poultry industry to put in place the most efficient surveillance strategy. Phase one of the programme will conduct surveillance for avian influenza in layer and broiler flocks.

Surveillance studies in indigenous wild birds, targeted at wrybills and mallards, have been carried out since 1976. This work will now become integrated into the overall avian influenza surveillance programme to ensure a consistent and coordinated approach.

Incursion response

BNZ is responsible for comprehensive biosecurity for all categories of birds, from grandparent commercial chickens to endangered native species. Risk-based response actions will be elaborated based on principles in the Technical Response Policies for Avian Influenza Viruses of Regulatory Concern. These documents are high-level statements of intent and specify response objectives for implementation by disease management operational teams.

Policy revisions over the past year include:

- a more holistic approach to biosecurity which incorporates response values for human health, environmental, cultural and social reasons as well as economic concerns
- integration with and complementing the Ministry of Health's New Zealand Influenza Pandemic Action Plan
- inclusion of response actions for emerging exotic AI viruses which are not LPNAI nor HPNAI such as H9N2, a zoonotic virus endemic from Korea to Israel
- identification of separate Technical and Stakeholder Advisory Groups as independent sources of advice to the Chief Technical Officer (CTO)
- inclusion of preventative, as well as emergency, vaccination as a response option, particularly for threatened indigenous birds
- phased eradication response of LPNAI only in commercial galliforms pending a more explicit risk assessment for other avian categories
- inclusion of provisions to evaluate the status of other susceptible species including aberrant hosts (cats, mustelids) and pigs (potential mixing vessels).

The overall aim of an incursion response is dependent on bird category, but is generally :

- rapid eradication of HPNAI
- phased eradication of LPNAI to prevent HPNAI evolution in commercial galliforms
- control/monitor/eradicate exotic emerging avian influenza viruses depending on risk (i.e., zoonotic).

Ready and waiting

New Zealand is well positioned to respond to an outbreak of avian influenza. The principles contained in the draft policies are consistent with overseas policies and conform to the guidelines in the OIE Terrestrial Animal Health Code. The policies are dynamic documents reflecting current scientific information, which will be reviewed and fully endorsed at the time of an incursion. They are ready and waiting in the event that an incursion response is initiated.

■ Helen Keyes, Senior Communications Adviser, Biosecurity New Zealand, phone 04 819 0161, helen.keyes@maf.govt.nz

Biosecurity New Zealand head elected president of World Organisation for Animal Health

Ministry of Agriculture and Forestry (MAF) Assistant Director-General and head of Biosecurity New Zealand, Dr Barry O'Neil, was elected president of the World Organisation for Animal Health, the Office International des Epizooties (OIE), at a meeting in Paris on 26 May.

He has been participating in OIE activities since 1991 and has served as New Zealand's delegate since 1994. He was previously Vice President of the OIE's administration commission – its board of directors – for the last three years.

MAF's Director-General Murray Sherwin welcomed Dr O'Neil's election, saying it was a significant achievement, both for Dr O'Neil and for New Zealand.

"The OIE is a key organisation for New Zealand. Our economy is extremely dependent on the trade of animal products and the OIE is responsible for the standards that allow animal products to be traded safely, including country 'disease-free' status. In matters of trade involving animal products, it is the standards of the OIE that the World Trade Organisation is guided by," Mr Sherwin said.

The OIE (also known as the World Organisation for Animal Health) is an intergovernmental agency founded in 1924 with 28 member countries. New Zealand joined shortly after and took part in the first general session in 1927. New Zealand has since become a major contributor to the standard-setting activities of OIE, which currently has 167 member nations.

"The presidency is not a full-time role, but it's a key position and will do much to enhance New Zealand's reputation internationally. It offers the opportunity to influence the future strategy of the OIE, and obviously personal challenges for Dr O'Neil as well," Mr Sherwin said.

Raised on dairy, sheep and beef farms in Manawatu and the Bay of Plenty, Dr O'Neil graduated from Massey University with a Bachelor of Veterinary Science with distinction in 1978. He practised in large and small animal practices in New Zealand, Asia and Europe, and from 1983 as a MAF veterinarian. In 1991, he accepted a diplomatic posting based in Brussels, responsible for New Zealand's veterinary issues in Europe and the Middle East, where he first became involved with the OIE.

Dr O'Neil became MAF's chief veterinary officer in 1994 and was appointed to head the MAF Biosecurity Authority when it was formed in 1999. The Biosecurity Authority was the forerunner of Biosecurity New Zealand, established in 2004, which Dr O'Neil now heads.

■ www.oie.int

Working group proposes **universal animal identification system**

In August 2004, an Animal Identification and Traceability Working Group was established to consider ways to enhance New Zealand's animal identification systems. While current systems are adequate, demands for traceability for animals will continue to increase for market access, and to meet biosecurity and other on- and off-farm needs.

The Animal Identification and Traceability Working Group's proposal will initially cover cattle and deer. Photo: Christine Hein-Patrick, courtesy New Zealand Warnham & Woburn Society.

The enhancements proposed are adoption of a single, universal livestock identification system, supported by a core registry of data linking animals with people and properties. The proposal will initially cover cattle and deer, and includes adoption of individual animal identification and maintaining electronic records of all animal movements between properties. This will replace the paper-based systems we have in place now, and aims to replace elements of existing systems which duplicate information requirements. Other livestock sectors may also be able to use a system, when developed, based on herd/flock or individual ID as appropriate.

Governance group established

An Animal Identification and Traceability Governance Group (AITGG) has now been established to oversee the work around development from concept to implementation, and will shortly appoint a Project Director. The AITGG members are: Ian Corney, Federated Farmers (Chairman); Ted Coats, Dairy Insight; Jeff Grant, Meat and Wool New Zealand; Richard McColl, Meat Industry Association; Andrew McKenzie, New Zealand Food Safety Authority; Kevin Old, Dairy Companies Association of New Zealand; Barry O'Neil, Biosecurity New Zealand; Paul Reynolds, Ministry of Agriculture and Forestry; and Simon Vincent, New Zealand Deer Farmers' Association.

The next steps will be completion of a more thorough 'needs analysis' by all the interested parties to identify specific requirements for information, and to prepare a project plan outlining resources and activities required.

Changes to existing animal identification systems

There are three MAF-approved animal identification schemes in place at present. These are schemes set up under the Biosecurity Act 1993 and the Biosecurity (Animal Identification Systems) Regulations 1999. Two schemes (MINDA, managed by Livestock Improvement Corporation, and the Animal Health Board's identification scheme) are approved for use in cattle and deer and assist in tracing the origins of bovine Tb cases. The third approved scheme is used by MAF for tracking imported live animals.

When the work of the AITGG is implemented, it is anticipated that there will be changes to these schemes to bring them into a universal single scheme. In the meantime, a number of changes to the official schemes have been proposed or are being developed.

The Animal Health Board (AHB) has been developing in-house information systems to replace functions previously contracted to AgriQuality Limited. The AHB's Disease Management Information System (DMIS) went live in 2005, and a tag registry to link tags issued by AHB to DMIS is currently under development.

RFID standards

The AITGG has been developing standards for the use of radio frequency devices, as an optional alternative to the bar coded tags or other visual devices. The AHB has indicated it is willing to recognise RFID devices in its identification scheme. This will assist the AITGG as a transition measure, until the new animal identification system is developed, by allowing people to use RFID tags as an official secondary tag.

Separately, AgriQuality has indicated to MAF that it wishes to continue to manage an official scheme to support market access and biosecurity services that can be extended to all species, not just cattle and deer, and is seeking recognition of a new official scheme.

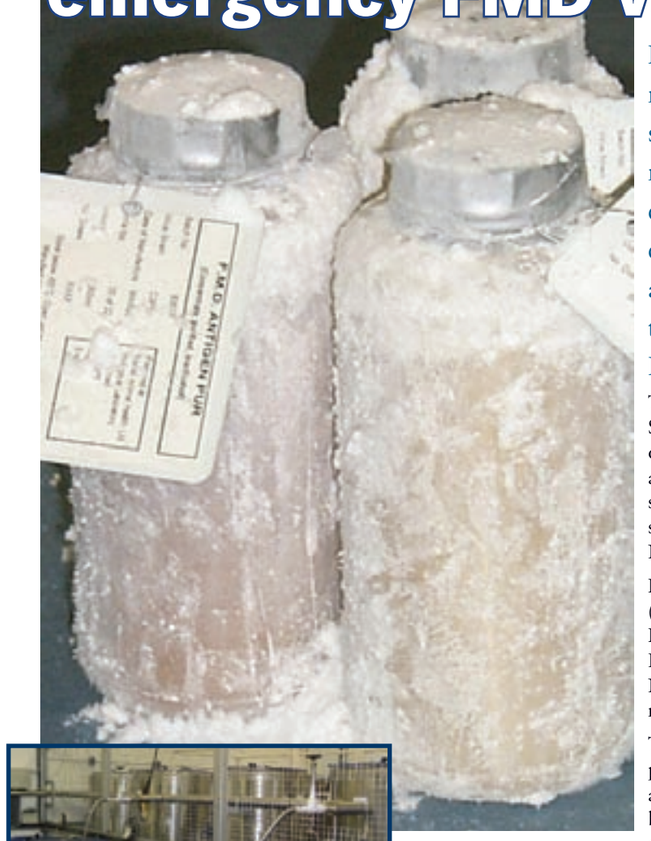
MAF responsibility to assess proposals

MAF has responsibilities in assessing changes to existing schemes or proposals for new schemes in accordance with the Biosecurity (Animal Identification Systems) Regulations 1999 under the Biosecurity Act. Part of its assessment requires MAF to consider whether there could be confusion between schemes or to ascertain the level of support (or absence of opposition) for the changes proposed. It is the responsibility of the organisations applying for changes to these schemes to provide this information for the assessment. Final approved changes will be notified by way of the *New Zealand Gazette* and *Biosecurity* magazine.

For further information on the proposed changes, please contact the Animal Health Board, AgriQuality Limited, or MAF.

■ Susan Keenan, Senior Policy Analyst, Biosecurity New Zealand, phone 04 819 0408, fax 04 819 0730, susan.keenan@maf.govt.nz

Commercial supply of emergency FMD vaccine secured



Above: Vials of FMD Ag.

Left: Liquid nitrogen tanks. Pictures courtesy of Tim Doel.

In July 2005, New Zealand joined the elite membership of developed countries that have secured a commercial supply of foot and mouth disease (FMD) antigen to be used for emergency FMD vaccine production in the event of an outbreak. Emergency vaccine has a greater efficacy than off-the-shelf vaccines that are routinely used in countries where FMD is endemic.

There are seven serotypes of FMD: A, O, C, SAT1, SAT2, SAT3 and Asia 1. Cross protection between serotypes or even within strains is poor, and therefore a variety of antigens have been selected that reflect current circulating strains of greatest risk to New Zealand. These frozen vials of specified FMD antigens, stored in liquid nitrogen, constitute New Zealand's FMD vaccine bank.

In March 2006, Dr Dorothy Geale, Senior Adviser (Surveillance and Incursion Response), visited Dr Timothy Doel, Site Manager of the Merial Animal Health Ltd Biological Laboratory in Pirbright, England, where New Zealand's FMD vaccine antigen concentrates are manufactured and stored.

They discussed vaccine production, manufacturing protocols and security provisions, and the manufacturing and quality assurance programme for the final antigen to be manufactured for the New Zealand vaccine bank was reviewed.

Last month, documentation for the final antigen for New Zealand's FMD vaccine bank was received, completing a process initiated in 2003 when Cabinet approval was sought to establish such a bank.

■ Andre van Halderen, Senior Adviser (Animals) Surveillance and Response, Biosecurity New Zealand, phone 04 819 0543 or 029 894 0543

Trade benefits likely in official BSE freedom status

The World Organisation for Animal Health (OIE) has unanimously approved New Zealand as a country free from bovine spongiform encephalopathy (BSE). Australia, Argentina and Uruguay have also been granted country freedom status.

"New Zealand has never had a case of BSE, but on issues of animal health that impact on trade, it is the standards of the OIE that the World Trade Organisation is guided by," said Biosecurity Minister Jim Anderton.

"This is good news for New Zealand overseas trade. It means fewer barriers for our products. Countries that are not recognised as BSE free must exclude certain tissues from all manufacturing, and they become waste instead of useful products. This includes products like gelatin and biopharmaceutical products. Biopharmaceuticals is an area where New Zealand's freedom from many other diseases offers significant opportunity.

"This decision also represents a large amount of hard work by many government officials, and they are to be congratulated. That work dates back to 1990, when BSE surveillance was first established."

MAF goes to the Fieldays

It's that time of year again, and the annual Mystery Creek National Agricultural Fieldays have just wound up.

The Fieldays are the biggest show on the agricultural calendar and attended by tens of thousands in the rural industries.

As with the past two years, MAF – incorporating Biosecurity New Zealand – had a significant presence at the event with a stand in the main Mystery Creek Pavilion.

The display represented the whole scope of MAF activities, featuring signage on MAF Policy initiatives, the work of the Quarantine Service and current Biosecurity New Zealand projects.

The 2006 biosecurity messages focused on avian influenza as well as animal identification and traceability.

The avian influenza message outlines how MAF is increasing surveillance and working to increase early detection and manage risks should the disease arrive in New Zealand. It also stressed that New Zealand is considered low risk for avian influenza viruses of public health concern, and is well prepared to respond to an outbreak.

The animal traceability story outlined how MAF is working with industry to enhance animal identification and traceability systems, starting with a single animal ID system for all cattle and deer. This will enable greater sharing of core information on animals, associated properties and people across approved organisations for a number of purposes including biosecurity, food safety and market access.

The site also featured 'live' displays of current biosecurity pests, with a tank of sea squirt and a display of forest pests.

Above: The Mystery Creek Fieldays provide an important opportunity to put the biosecurity message before tens of thousands of New Zealanders. Photo: Clive Dalton.

Right: Avian influenza and animal identification were part of this year's biosecurity focus at Mystery Creek.

Gypsy moth levy unchanged

For the third successive year the gypsy moth levy placed on all containers and used cars imported into New Zealand will remain unchanged at $0.65c per unit. The levy covers the annual cost of the surveillance programme and ensures that gypsy moth trapping retains a high level of efficiency at an equitable cost.

Gypsy moth *(Lymantria dispar)* is a major threat to the New Zealand environment and has been the target for specialist surveillance since 1992, when ships from the Russian Far East were identified as capable of transporting Asian gypsy moth egg masses to our shores.

In 2005, the surveillance programme was revamped to increase the probability of detecting any stray moths. The most significant improvement was targeting high-risk pathways for gypsy moth introduction into New Zealand. Sites such as transitional facilities process the approximately 500,000 imported containers arriving in New Zealand annually and represent the most likely areas for an incursion. In addition, a grid-based trapping system is now used to allow a large area to be covered with a relatively small number of traps.

The programme is based on the placement nationwide of around 1600 pheromone-baited traps. The traps are checked fortnightly from November through to April. Any suspect moth captured in a trap is sent to Ensis entomologists for identification. All moths forwarded to Ensis this season were already known from New Zealand and none were reported as the gypsy moth.

In 2003, a gypsy moth was trapped in Hamilton which resulted in a successful eradication programme, highlighting the value of the early warning trapping system.

■ David Hayes, Biosecurity New Zealand, david.hayes@maf.govt.nz

GETTING IN TOUCH on marine biosecurity

New Zealanders have a strong affinity with the marine environment.

A new survey has found 39 percent of the general population fish in the sea, 32 percent boat or jet-ski around our coastline, 21 percent kayak, 18 percent dive or snorkel and 10 percent go yachting.

With this high use of the marine environment, both commercially and recreationally, New Zealanders are in an ideal position to act as the 'eyes' for biosecurity. Biosecurity New Zealand's aim, therefore, is to empower New Zealanders to be biosecurity-aware.

This means encouraging marine users to:

- report anything unusual they notice
- if they own a boat, take the responsibility to keep the hull clean; and
- if they own a marine farm, develop plans to prevent diseases and pests from destroying their business.

Biosecurity New Zealand recognises the need to offer support for this relationship to be a success, and future work will concentrate on improving our linkages with those in the marine sector.

To this end, we are working to make sure the stakeholders who need or want information about our biosecurity work get it, and that we in turn hear from them.

We have recently sent a survey form to stakeholders we have identified and who are on our mailing lists. If you are interested in registering as a stakeholder and receiving information from Biosecurity New Zealand, please email: lesley.patston@maf.govt.nz

We hope that once we have this information on hand, we can begin to improve our communication with you and others in your industry or interest group.

■ Lesley Patston, Senior Communications Adviser, Ministry of Agriculture and Forestry, phone 04 819 0163 or 027 205 1418, lesley.patston@maf.govt.nz

Biosecurity spinoff for boat washing facility

The manager of a new Tauranga boat washing facility describes his venture as "a bit of a Kiwi number eight wire story". As well as speeding up the process, the boatwash saves water and can help stop the spread of weeds and other unwanted organisms.

Noel O'Dwyer and two friends came up with the idea of a coin-operated boatwash after spending an hour-and-a-half washing their boat following a day out fishing.

Exotic aquatic pests can take over natural ecosystems and reduce biodiversity; they can also affect recreation and fishing.

Biosecurity New Zealand also recommends maintaining a regular hull cleaning routine, ensuring that the hull is coated in anti-fouling paint and is repainted regularly.

The Tauranga boatwash took the team two years to perfect, but it means the job is now done in under a minute. Located at Tauranga's popular Sulphur Point, the facility is similar to a carwash, and is used by about 500 boaties per week in summer.

The invention also saves a considerable amount of water. Washing by hand can take up to 1200 litres of water, compared with the 135 litres the boatwash uses.

The inventors plan to take the boatwash to other regions and are already in talks with a number of councils throughout the country and abroad.

Above: the Boatwash facility in Tauranga saves time and money.

"The opportunities within New Zealand are huge," says Noel. "Australia will be a big market for us too, with water saving opportunities. We've already had some interest from Townsville."

Tauranga Council Senior Property Consultant John Budden says the boatwash is a huge benefit to the council and to the users. "I hope a lot of other councils in New Zealand take it up."

Noogoora bur found in Bay of Plenty

Noogoora bur (*Xanthium strumarium*) has been found at two sites in the Bay of Plenty. The plant pest is also found in the Waikato where it is the subject of an eradication programme, but this is the first detection in the Bay of Plenty for more than 50 years

The seeds and cotyledon-stage young plants are poisonous to stock, particularly pigs and cattle. The fruit (small woody 'burs') are easily entangled in sheep's wool and can decrease fleece quality. Burs can also compete with pasture species and carry some fungal diseases capable of infecting horticultural plants.

Closely related to Bathurst bur, and similar in appearance, Noogoora bur is often taller, does not have spines and the bur is bigger with much longer 'beaks' (see photo).

The leaves are grape-like and alternate on the stems. They are 5–15cm long and have prominent purple veins. The flowers are inconspicuous and are found from January to March. The almost egg-shaped bur is hard and woody, densely covered in hooked spines, has terminal beaks, and is brown when mature. The burs appear from March through to August.

Seed remains dormant

There are two seeds in each bur, one slightly larger than the other. One seed germinates quickly, the other is slower to germinate and can remain dormant for several years. The burs catch in wool, tail hair, bags and clothing. They also float, which allows them to spread readily along waterways.

Noogoora bur is widespread in North America and Australia. It gets its name from Noogoora Station in Queensland where it was first identified in Australia in the 1860s after being imported with cotton seed from the Mississippi delta.

Noogoora bur has been found in the Waikato around Matamata and Cambridge, and historically from one early collection in Wellington City. It is currently an eradication species in the Environment Waikato Regional Pest Management Strategy. There has been one previous collection from the Bay of Plenty, from an unspecified Tauranga site in 1953.

Maize paddock sites

The bigger of the two sites is a maize paddock near Papamoa. Initially thought to be Bathurst bur, the land owner reduced the infestation from 5 hectares to scattered plants over a 1-hectare area before the plant was recognised as Noogoora bur.

The second, much smaller site was found on the edge of a maize paddock near Bethlehem, Bay of Plenty.

Environment Bay of Plenty (EBOP) officers have moved swiftly to develop a management plan for the two sites. All plants have been removed by hand and burnt. Drains and riverbanks in the catchment have also been inspected, after earlier flooding of one of the sites.

Noogoora bur: subject of eradication programmes in the Waikato and now the Bay of Plenty.

Working with the landowners, new season's planting will be delayed to allow seeds to germinate and be sprayed out twice. This will be followed by a post-emergent herbicide following planting, and physical inspection of the site to remove by hand any Noogoora bur plants that may emerge.

Officers from EBOP are engaged in surveillance of properties where some of the maize was sent as silage, and will continue this for a number of years. Tracking of the maize that went to a grain merchant is also underway.

Playing detective, EBOP officers are also investigating possible sources of the Noogoora bur infestations on the two widely separated properties.

■ Victoria Lamb, Senior Adviser Pest Management, Biosecurity New Zealand, phone 04 819 0523, victoria.lamb@maf.govt.nz

How do we know we are doing things right?

Biosecurity New Zealand (BNZ) is often subject to scrutiny. European Union agricultural officials might ask how their import standards are being met by New Zealand exporters. The media might want to know what we would do in a foot and mouth disease outbreak. BNZ might want to assure itself that a shipment of cattle has been certified correctly to meet market access and animal welfare requirements.

For situations like these, BNZ can point to standards and procedures that detail its actions and those of organisations that provide services to it. But how do we know that our standards and procedures are actually being followed?

That's where the Compliance Team of Biosecurity New Zealand comes in.

The Compliance Team is a group of auditors, within the Compliance and Enforcement Group, with agricultural, horticultural, forestry, veterinary and animal welfare backgrounds. It is also building marine and environment experience in order to cover BNZ's extended accountabilities.

The team provides a tool for BNZ Directors to assess compliance with international agreements, legislation, standards and procedures for which they are accountable. In other words, it is a check to see what should be happening is actually happening.

Much of the work arises from planned, regular audits that offer assurance that the biosecurity system is working as it should. The team also undertakes investigations and reviews of particular circumstances where things might not have gone as planned.

Audits and investigations carried out by the Compliance Team are based on seeking improvement to a system rather than being the clichéd 'finger pointing' exercise that audits can be perceived to be.

"We focus on both systematic and technical components of an auditee's operations, to provide Directors with confidence in the general management of their systems as well as the technical aspects," says team manager Wayne Ricketts. "We also look at BNZ's role and advise on potential improvements to its systems. With the policy:delivery split, audit has a core role in ensuring policy is being implemented and that it is actually implementable."

Once an audit has been agreed to, Directors are invited to send staff as observers. While this provides for technical assistance (to the auditor), it is also an avenue for improving relationships between standard-setters and delivery agencies, as both get to see 'how the other half lives'.

When an audit has been completed, the parties involved meet to discuss the findings and agree on methods of addressing any deficiencies and recommendations for improvement. This combined approach provides a robust system where everyone is working toward the same goals.

Barry O'Neil, who heads Biosecurity New Zealand, is very committed to the audit process. "The audit function is an essential tool for ensuring that required standards are being implemented as required and therefore that BNZ continually improves as an organisation," he concludes.

■ Wayne Ricketts, Team Manager, Compliance, Biosecurity New Zealand, wayne.ricketts@maf.govt.nz

Stricter import rules for wood packaging

As foreshadowed last year in *Biosecurity* 59:12, wood packaging material is now subject to stricter import rules under a new import health standard (IHS) that came into effect on 1 May.

All New Zealand importers have until 1 July 2006 to comply with the standard, which has been developed as a response to the biosecurity risk of untreated packaging. From this date, all non-compliant wood packaging on imports will be treated, re-shipped or destroyed at the expense of the importer.

Under the standard, importers will have to ensure that packaging arriving in New Zealand has undergone either heat treatment or fumigation (methyl bromide or phosphine), or chemical preservation.

The new standard is closely aligned with the International Standard for Phytosanitary Measures Number 15: Guidelines for Regulating Wood Packaging Material in International Trade (ISPM 15). The New Zealand standard, however, gives treatment options, such as chemical preservation and fumigation with phosphine, that are not in the ISPM 15 standard.

Many international exporters are already complying with ISPM 15 for shipments to other countries.

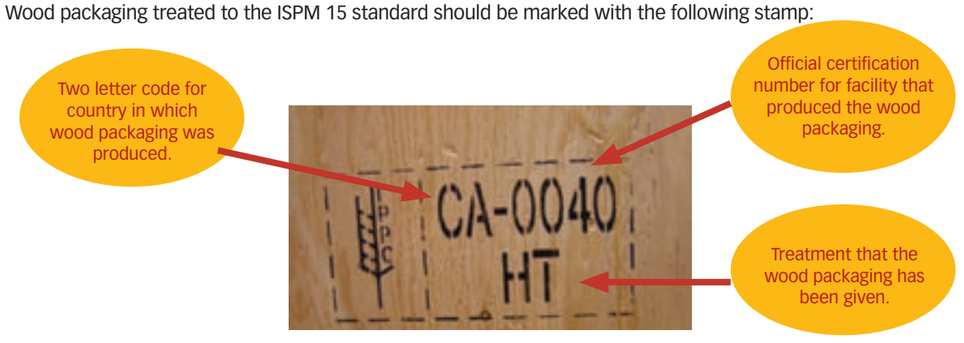
All wood packaging material that is treated and marked according to the ISPM 15 standard should comply with the New Zealand import health standard, so long as all bark has been removed. It may be inspected to ensure that it is free of regulated pests and extraneous material such as leaves and bark. Wood packaging that is not marked must be accompanied by a phytosanitary certificate with the treatment detailed, or a National Plant Protection Organisation-endorsed treatment certificate.

■ Jim McLaggan, National Programme Manager, MAF Quarantine Service, phone 07 856 1814, fax 07 856 1827, seacontainer@maf.govt.nz

■ www.biosecurity.govt.nz/woodpackaging

Mark of approval

Wood packaging treated to the ISPM 15 standard should be marked with the following stamp:



Note: This mark can only be given to wood packaging by an approved provider from the country of origin.

Tool for destruction of risk goods en route to New Zealand

This month, a biosecurity tool we'd prefer never to have to use will begin a five-to-six week voyage across the Pacific to New Zealand from Lancaster Pennsylvania, United States.

The 12-metre-long CP4000HD Air Curtain Incinerator (Destructor) trailer-mounted unit will increase Biosecurity New Zealand's (BNZ's) capability for rapid, effective, mobile destruction of risk goods in a New Zealand-tested, environmentally acceptable manner. These risk goods include everything from carcasses of livestock infected with exotic disease to plant or forestry pests, genetically modified organisms and illegally imported goods.

MAF received an exemption under the Ministry for the Environment's National Environmental Standards for Dioxins and other Toxics, Air Quality and Landfill Gas 1 Sept 2005 to use portable air curtain incinerators for Part VI provisions of the Biosecurity Act 1993.

The Air Curtain Incinerator (ACI) trial carried out in the Waikato last year by Sinclair Knight Merz confirmed that a trailer-mounted ACI pit unit could dispose of sheep and cow carcasses with minimal adverse effects on the environment at rates similar to those in overseas studies.

A trailer-mounted pit ACI unit is preferable in New Zealand due to its better mobility, reduced transportation costs and fewer terrain restrictions than a skid mounted unit. The latter, however, is not restricted by soil and groundwater conditions.

BNZ intends to lease the CP4000HD unit to a commercial forestry contractor. Such contractors have the necessary skills and ancillary equipment, such as excavators fitted with grapples to lift wood and infected carcasses or other risk goods. They are also well placed for sourcing the dry wood needed to fuel ACI units. Through this arrangement, experienced operators will be available to run the ACI in the event of a biosecurity emergency.

■ Mark Howell, Senior Adviser (Animals) Surveillance and Response, Biosecurity New Zealand, phone 04 819 0545, mobile 021 190-3901, mark.howell@maf.govt.nz

Above: The successful air curtain incinerator trial held last year in the Waikato showed the importance of access to ancillary equipment and skilled operators.

Inset: We'll take one of those, thanks: A trailer-mounted air curtain incinerator like these is en route to New Zealand.

PEOPLE
IN BIOSECURITY

Dr **Susan Cork** recently joined the Investigation and Diagnostic Centre (IDC), Wallaceville, to take up the position of Team Manager, Virology. Susan was previously at Head Office where she worked for two years in the Animal Risk Analysis Team and, more recently, spent a year working with the Strategic Science Team.

Susan graduated with a BVSc from Massey University in 1986 and has a special interest in disease diagnosis, emerging wildlife diseases and public health. She was awarded a PhD in 1994 for a study on the diseases of New Zealand native birds and helped set up a number of collaborative disease assessment initiatives for New Zealand wildlife with colleagues from Massey University and the Department of Conservation. In 1995, Susan began a very rewarding two-year project running a district veterinary diagnostic laboratory in the eastern zones of the Himalayan Kingdom of Bhutan.

During her time in Bhutan, and also a short period of time managing the SPCA in Suva, Fiji, Susan gained experience in the diagnosis of a range of diseases exotic to New Zealand. She is currently completing a Diploma in Public Policy and has published a book and a number of articles and scientific papers on animal health-related subjects.

Fungus hits radiata pine in South

Nectria flute canker is having a serious impact on radiata pine plantations in the southern South Island.

Stem malformation, typically developing after pruning, has become a problem in some *Pinus radiata* plantations in part of the South Island over the last 10 years. Infection through the pruned branch stub may result in extensive stain and decay within the stem, although tree crowns remain green and healthy.

The cause of the problem has been identified as *Nectria fuckeliana*, a Northern Hemisphere fungus which is commonly recorded in its natural range as a saprophyte or weak pathogen of species of Picea and Abies. It is the most commonly isolated fungus from affected trees. Nectria fuckeliana had not been recorded in New Zealand prior to 1996.

Current research, managed by a group of affected forest growers under the umbrella of the Forest Health Research Collaborative, is focused on delivering on-the-ground mitigation strategies. Ecological studies are in progress to better understand the relationship between the fungus and its host, the infection process, and spread between trees. A major field trial to clarify the relationship between pruning and disease development is delivering valuable disease management information, while disease incidence surveys are providing knowledge of disease impact at both a local and regional level.

Funding is being sought for a number of additional initiatives, including:

- production of a field diagnosis guide
- evaluation of the extent of genetic resistance within radiata pine
- potential for disease vectoring
- wound treatments to reduce infection; and
- development of a site risk classification system.

Gaining a better understanding of the disease, and the development of mitigation strategies, are critical not only to the management of affected forests, but also to understanding the risk to the wider New Zealand plantation forest estate.

■ Dr Gordon Hosking
Hosking Forest Consultancy
Gordon.Hosking@xtra.co.nz

Tell-tale symptoms of nectria flute canker on radiata pine.

PEOPLE
IN BIOSECURITY

Clive Pigott joined Investigation and Diagnostic Centre (IDC), Wallaceville in May 2006 as Immunology Team Manager. He comes from the United Kingdom, where he most recently worked as Senior Development Scientist with Dynalbiotech Ltd, in the HLA Diagnostics division. Prior to this, Clive worked extensively in the clinical laboratory setting dealing with solid organ and bone marrow transplantation, within the NHS. In addition, he spent a valuable four years working for the North-West Regional Immunology Service, St Mary's Hospital Manchester. Educated to PhD level, Clive now manages one of the three key diagnostic laboratory teams at the Wallaceville site.

Paul Hallett recently joined the Pre-clearance Directorate of Biosecurity New Zealand (BNZ) as Senior Adviser, Operational Standards. Paul was most recently employed by an independent pre-shipment inspection company where he focused on quality system development, biosecurity issues and stakeholder relationships. Previously he had been employed by MAF Quarantine Service undertaking various roles within the Auckland cargo operation.

Paul moved from Auckland to Wellington to undertake this position. He will be involved in various projects within the Operational Standards team such as the container pathway project.

Gum leaf skeletoniser larva (above) and painted apple moth adult (page opposite).

Four tools for use in biosecurity incursion responses

The recent announcement that painted apple moth (PAM) had been successfully eradicated from West Auckland and that there had been no further finds of fall webworm in Mt Wellington, Auckland was cause for celebration.

Ian Gear, Manager Eradication Programmes with Biosecurity New Zealand (BNZ), says, however, that this by no means signals a relaxation of the vigilance required to keep New Zealand free of exotic pests and diseases.

"Over the last decade there have been five moth incursions which have required a significant biosecurity response and drawn strongly on community support (see box on next page).

"Initially the tools available to assist in these responses were limited. Over time they have become increasingly sophisticated and are a valuable addition to the biosecurity toolbox for future incursion response programmes," he says.

Four tools in particular have evolved which will provide vital information for BNZ and its technical advisers. Due to its complexity, duration, and scale, the PAM programme provided the greatest opportunity to develop and test the efficacy of these techniques. They were then applied during the fall webworm eradication programme.

Modelling

Population and phenological modelling is dynamic and responsive, allowing the modeller to maximise the value of existing information and use it to help develop the most effective and timely incursion response programme.

"Often, when a pest is first discovered little is known about it. We need to know its origin, means of entry, likelihood of establishment, potential threat to native species, feeding habits, and whether it is a new population or has it already established here. All these questions need to be answered.

"This requires the gathering of vast amounts of information that can be refined and distilled as we gain a better understanding of the invader's potential impact."

Modelling has been used to support decisions on the timing of activities such as ground searches, trap deployment, sterile insect releases, interpretation of trap catches and, if necessary, aerial treatments.

Ian describes it as a predictive technique, where assumptions are clearly defined, allowing them to be questioned, defended, or adjusted as further information arises.

Sterile insect technique

Another tool in the biosecurity arsenal is the sterile insect technique (SIT) that was used during the PAM response. SIT is a form of insect birth control. Male moths that have been sterilised through exposure to Cobalt 60 are released in the infested area, where they mate with wild female moths. The resulting progeny will be sterile, and over time the population will collapse or die out.

Moths bred in the colonies are fed an artificial diet which includes a dye that stains body fats red. Males released during the sterile insect technique programme are also dusted with a luminous dye. These two dyeing techniques make it easy to identify the trapped males. Recovered males provide valuable information, such as flight distances from the release site, that can be used to inform and adjust the models.

The sterile insect technique was used towards the end of the eradication programme at sites where recent PAM trap catches had occurred, effectively flooding these areas with male moths carrying the sterility factor.

Mitochondrial DNA analysis

Rapid technological advances in molecular science have also contributed to the tools available to strengthen our biosecurity defences. Analysis of mitochondrial DNA (mtDNA) reveals the genetic profile (haplotype) of the specimen, which can then be compared with the profile of other specimens to determine if they have a common ancestor.

As mtDNA is passed from mother to daughter it is a powerful tool for tracking matrilineage in some species back hundreds of generations. It was this technology that was employed in the human genome project.

During the PAM response, two distinct genetic profiles, haplotype I, and haplotype II were identified in painted apple moth specimens drawn from Western Auckland and Australia. All of the specimens tested from the West Auckland population were haplotype I. Some of the specimens trapped during 2005 east of the western Auckland population were found to be haplotype II. Stable isotope analysis indicated that these specimens had most likely developed as larvae in Australia.

Moth incursion	Location	Date	Current status
White spotted tussock moth	Eastern Auckland	1996	Eradicated
Painted apple moth	Western Auckland and Mt Wellington (Auckland)	1999	Eradicated
Gum leaf skeletoniser	South Auckland	2002	Pest management programme
Fall webworm	Penrose/Mt Wellington (Auckland)	2003	Eradicated
Asian gypsy moth	Hamilton	2003	Eradicated

Stable isotope tool

It was not until the stable isotope tool became available in 2005 that a link between a given moth and the location in which the larvae had developed could be determined. The stable isotope ratio technique examines the proportions of the isotopes of elements such as hydrogen found in the wing scales of the moth specimen and compares that with the ratios found in the rain water from known sources. Similarly, carbon found in the wing scales is compared with carbon found in host plants grown in a given locality.

Ian says that while conventional analysis can determine what the sample contains, stable isotope analysis gives information about the origin of the specimen.

"Knowing where the trapped adult most likely developed as a larva helps us to understand the possible pathway it followed to enter New Zealand. Steps can be taken to close the pathway down or put in more biosecurity defence mechanisms such as fumigation of sea containers, heat treatment, or a revision of the health import health standards," he says.

"The tool has given proof that the four of the five PAM trapped in the Auckland surveillance grid during 2005 most likely developed as larvae in Australia. Testing of the fifth suggested it was of New Zealand origin, possibly the offspring of one of the new arrivals caught earlier in 2006."

New tools employed against fall webworm

BNZ used mtDNA analysis and stable isotope tools when confronted with the find of another fall webworm in Mt Wellington in 2005 – just weeks before the announcement that the pest had been eradicated. It was a tense time. It was known two strains of the fall webworm are found in North America – a red head, and a black head variant. The black-headed strain is also found in Japan.

MtDNA analysis confirmed the individuals trapped during 2005 in Auckland to be the black-headed strain. This was backed up by the stable isotope analysis that indicated that these individuals most likely originated in a region with more depleted deuterium (hydrogen 2) than New Zealand. Japan is a region that has an isotopic signature consistent with the analyses.

Exciting addition to toolbox

Ian is excited by the potential these new tools offer. However, he points out that he sees the techniques as additions to the biosecurity toolbox, not replacements, complementing other tools.

"Decisions made by MAF would not have been different in the absence of the information offered by the molecular and stable isotope tools. Both of these tools have served to reinforce the fact that the right decisions have been and continue to be made."

■ Ian Gear, Manager Eradication Programmes, Biosecurity New Zealand, phone 04 819 0410, ian.gear@maf.govt.nz

Brown lace lerp hyperparasitoid found in New Zealand

By Jo Berry, Landcare Research

A parasitic microwasp associated with brown lace lerp, a pest of some eucalypts, has been newly recorded from New Zealand. The new microwasp, *Coccidoctonus psyllae*, is a hyperparasitoid, or a parasitoid that uses another such wasp as its host. *C. psyllae* is unlikely to be a welcome addition to our fauna as its presence will probably contribute to an increase in brown lace lerp populations.

Brown lace lerp, *Cardiaspina fiscella*, is an Australian psyllid that attacks Eucalyptus species. Severe infestations can result in extensive damage to foliage. Brown lace lerp was first identified in New Zealand in 1996, and has spread throughout most of the North Island. It has now been recorded from a wide range of *Eucalyptus* species (PPIN records), but it appears that in New Zealand *C. fiscella* is only a significant pest of *Eucalyptus botryoides, E. grandis* and to a somewhat lesser extent *E. saligna* (D. Hocking and D. Satchell pers. comms., 2006).

Arrival of the brown lace lerp parasitoid

In late 1999, an Australian parasitic microwasp, *Psyllaephagus gemitus*, was recorded for the first time from New Zealand, reared from brown lace lerp in Northland (Withers 2001). At the time of its discovery, an application to import *P. gemitus* into containment for testing as a biocontrol agent for brown lace lerp had just been approved by ERMA. In 2000, lerp populations appeared to have decreased in Northland wherever *P. gemitus* was present and tree recovery was noticeable (Withers and Bain, 2000; Withers 2001).

… and hyperparasitoid

Further rearing over the summer of 2005–06 has revealed another parasitic microwasp associated with brown lace lerp in Auckland.

The new hyperparasitoid, Coccidoctonus psyllae.

This species, *Coccidoctonus psyllae*, is a hyperparasitoid, i.e., a secondary parasitoid, or one that uses another parasitoid as a host. Species of *Coccidoctonus* are hyperparasitoids of various homopterans, including psyllids and scale insects, via primary hosts in the hymenopteran families Encyrtidae and Pteromalidae (Noyes 1988).

In its native Australia, *C. psyllae* has been reared as a common hyperparasitoid of several lerp-forming psyllids, including brown lace lerp (Riek 1962, Campbell 1992). The primary parasitoids of the psyllids recorded by these authors were "species of … *Psyllaephagus*", and "*P. gemitus* and others" respectively. In New Zealand, *C. psyllae* has been reared from brown lace lerp along with *Psyllaephagus gemitus*. This association, along with known rearing records from Australia, indicates that *C. psyllae* is using *P. gemitus* as a primary host in New Zealand. To date, *Coccidoctonus psyllae* has been reared from eucalypts at three sites in urban Auckland: Mangere, Waikumete Cemetery and Mt Albert.

C. psyllae is the second species of *Coccidoctonus* to be recorded from New Zealand. The first, *C. dubius*, was deliberately introduced from Australia in 1921 for the control of black scale in the mistaken belief that it was a primary parasitoid.

Effects of hyperparasitoids on pests

In complexes involving hyperparasitoids, an inverse relationship between the rate of hyperparasitism and the level of herbivore control by primary parasitoids is often assumed. Research has shown that there is evidence for this relationship, in the short term at least. Accordingly, the presence of *Coccidoctonus psyllae* here is likely to reduce the level of control of brown lace lerp provided by its primary parasitoids, and high populations of *C. psyllae* are likely to result in higher populations of brown lace lerp. Outbreaks of two *Cardiaspina* species in Australian forests are thought to have been contributed to by high populations of *C. psyllae* and another hyperparasitoid acting to suppress *Psyllaephagus gemitus*, the primary lerp parasitoid (Campbell 1992).

This relationship between hyperparasitoids and herbivores has been demonstrated recently in the same ecosystem in a striking parallel: the accidental arrival of the *Eucalyptus* tortoise beetle hyperparasitoid, *Baeoanusia albifunicle*. The primary host of the hyperparasitoid *Baeoanusia* is the deliberately introduced tortoise beetle egg parasitoid *Enoggera nassaui*, which was introduced in 1987. *Enoggera* was initially successful in controlling its target, the tortoise beetle, but in 2001 *Baeoanusia* was first recorded attacking *Enoggera*. The hyperparasitoid has suppressed *Enoggera* populations so much that at times eucalypt growers have resorted to broad-spectrum insecticides to control eucalyptus beetles.

Entry pathways for parasitoids

Anecdotal evidence suggests that exotic parasitoid species may often enter New Zealand along with their hosts. New records of a number of recently introduced pest species have been followed closely by those of their respective parasitoids. This suggests that founder members of many pest species may enter the country complete with their own parasitoid complement, which may include not only parasitoids but also hyperparasitoids.

Brown lace lerp was first recorded here several years before its primary parasitoid *P. gemitus*, which in turn was recorded before the hyperparasitoid *C. psyllae*. This chronology suggests repeated incursions, and the possibility that *P. gemitus* was deliberately introduced for brown lace lerp biocontrol has even been raised (Withers and Bain, 2000; Withers 2001). However, the evidence does not preclude the possibility that the lerp and its entire parasitoid complex entered the country simultaneously. The lower population levels and less conspicuous habit of the microwasps would result in a longer gap between establishment and recognition.

Pathways suggested in the literature for entry of Australian insects include the unintentional entry of foliage associated with air cargo containers, as well as camping and golfing equipment. *Eucalyptus* foliage remains viable for a considerable length of time after detachment from the tree, and is capable of supporting the parasitoid complexes associated with phytophages such as lerps for several weeks, as evident during the rearing of this hyperparasitoid.

Wherever possible, new phytophages should be reared in order to detect associated parasitoid and hyperparasitoid incursions.

■ Jo Berry, Landcare Research, phone 09 574 4105, fax 09 574 4101, berryj@landcareresearch.co.nz

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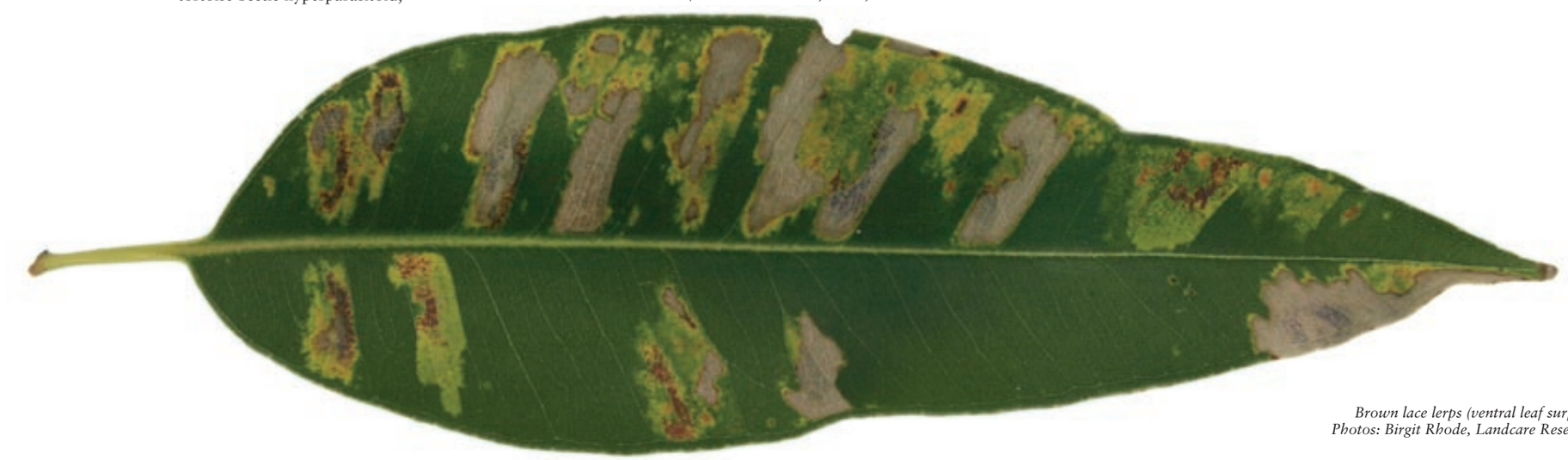
Eucalyptus leaf (dorsal leaf surface) showing damage caused by brown lace lerp feeding.



Brown lace lerps (ventral leaf surface). Photos: Birgit Rhode, Landcare Research.

Better Border Biosecurity:

helping defend New Zealand's border against foreign pests

Providing the knowledge and tools to help Biosecurity New Zealand protect agricultural and horticultural crops, exotic forestry and native flora against harmful pest invaders is one of the goals of a substantial new science project.

Better Border Biosecurity, or B3, aims to develop new approaches and tools to ensure harmful organisms are kept out of New Zealand or, if they do manage to enter, are eradicated before establishing permanent populations. The programme covers everything from bacterial and viral diseases to weeds and pests.

The programme's emphasis is on protecting plants: from crops, to amenity plants and indigenous vegetation.

Government-funded programme underway

Science leadership for the 12-year programme is provided by Dr Craig Phillips of AgResearch, while Dr Grant Smith of Crop & Food Research provides contract leadership. The $74 million programme is funded by the Foundation for Research, Science and Technology.

Exotic pests that slip into New Zealand have the potential to decimate crops and ravage native flora and fauna, Grant Smith of Crop & Food Research says.

"We want to find ways to more closely involve the country's farmers and growers in early detection of newly arrived pests. This will increase our chances of eradicating them before they can become too widely distributed to make eradication feasible."

For example, a fungus called White Blister, which recently caused severe damage to Australian broccoli crops, was detected for the first time on New Zealand broccoli last year. "A grower detected this fungus and it demonstrates how important it is to make use of every pair of eyes we can to keep on top of new pests.

"The sooner you get on top of a potential problem, the easier it is to contain and eradicate."

Relationships critical to success

Craig Phillips says the programme will be working hard to involve all interested parties in the research. "Because we're working towards an outcome that is critical for New Zealand, we need to work closely with the people who will implement the tools and techniques we develop.

"We're confident that even relatively small improvements to New Zealand's biosecurity systems will have enormous benefits.

"If we can reduce the number of pests entering New Zealand over the next 12 years by 10 percent, and eradicate 10 percent more of the pests that do become established, then New Zealand benefits by more than $100 million. Environmental and social benefits are additional to this."

Nine organisations and agencies with responsibility for helping to protect the New Zealand environment and primary industries are involved in the programme: Crop & Food Research, AgResearch, HortResearch, Scion, the Lincoln University-based National Centre for Advanced Bio-Protection Technologies, the Ministry of Agriculture and Forestry, the Department of Conservation, the Environmental Risk Management Authority and the Forest Biosecurity Research Council. Better Border Biosecurity is also beginning to work closely with a similar biosecurity research organisation in Australia.

Utilising a broad range of expertise

Craig Phillips chairs a Science Management Committee which includes representatives from all the parties. He says each research provider brings detailed knowledge of their sector, allowing the programme to utilise a range of expertise, equipment and resources to achieve four broad outcomes.

Lincoln University has a key role in helping train the capability needed for this country's future biosecurity research.

"B3's first outcome is aimed at protecting New Zealand's primary production. Researchers are designing methods for predicting what new pests of agriculture, forestry, horticulture and cropping are likely to arrive here, and what impacts they might have.

"Others are developing tools and techniques for excluding and intercepting biosecurity risks, and for containing and eradicating any which do make into the country.

"A second outcome is similar, but aims to protect native plants, while the third is developing new biosecurity technologies which are applicable to a diversity of sectors. The final outcome is conducting research to help the Environmental Risk Management Authority to better assess the risks involved with intentional importations of living organisms."

■ www.b3nz.org/

Power of two-way communication for better biosecurity results

The success of B3 relies on the people who make a difference to New Zealand's biosecurity using the new information, tools and techniques which are developed by the programme. It's a challenge AgResearch social scientist Denise Bewsell is helping overcome through researching the needs of key groups.

The critical role of customs brokers was one of her early projects. "Customs brokers play a key role in providing information to their clients on biosecurity. Our research found that improving the communication with this group was an effective means of improving national biosecurity." Her findings have already been passed on to MAF Quarantine Service, so staff working in the area can take advantage of what was found.

Denise is one of a group of social scientists from AgResearch, HortResearch and Ensis who are working together on the social dimensions of biosecurity. There are a number of different programmes underway, including one by Dr Lisa Langer, of Ensis, who is researching what processes need to be put in place, from a community perspective, so that if an incursion happens the support of the community can be quickly harnessed.

Denise Bewsell: working to understand the human dimension of biosecurity.

Entomologist Laura Fagan – using overseas native plantings as sentinels.

Overseas plantings of New Zealand natives act as warning beacons

Overseas plantings of New Zealand natives are to become important sentinels for scientists looking for clues as to what new pests and diseases could become established here in years to come.

Laura Fagan of Crop & Food Research leads a research project to set up monitoring overseas plantings of native New Zealand plants. "If we are aware of which pests and diseases attack New Zealand plants in places like Europe or North America, then we have prior warning on the organisms that may put our native flora at risk if they arrived here."

The project is now underway and Laura Fagan is gathering information on potential research sites overseas. She aims to establish three pilot monitoring sites over the next two years with others to follow once monitoring protocols are established.

Scientists from AgResearch, HortResearch and Ensis will be working closely with Biosecurity New Zealand on the project.

Muddy boots and tents: what are travellers bringing in?

Discovering what biosecurity threats are brought into the country on the boots and tents of travellers is the focus of a scoping exercise being coordinated by AgResearch's Mark McNeill.

Microbiologist Emily Gerard and entomologist Mark McNeill discuss bacterial extractions from soil removed from muddy boots.

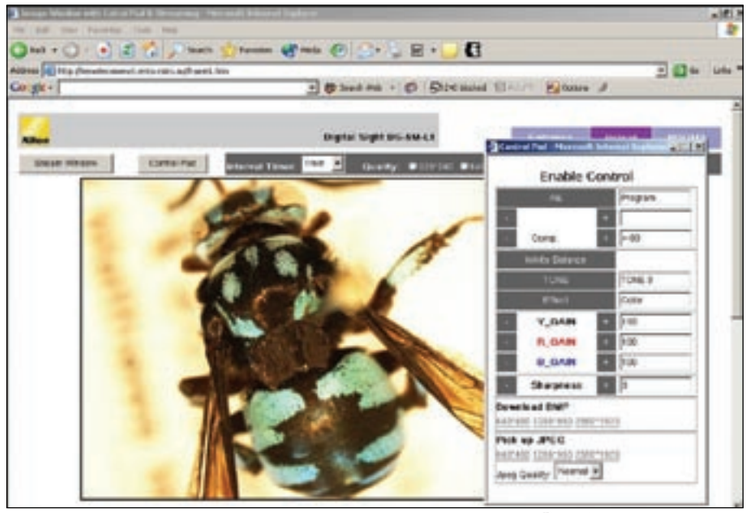
Using the Christchurch International Airport as his source of samples, Mark McNeill is working with MAF and ERMA to ensure soil and organic matter which arrives with international passengers can be safely transported to research laboratories in accordance with New Zealand's stringent biosecurity regulations. This will set the scene for research to look for such things as insects (dead or alive), nematodes, fungi and bacteria which have arrived with aircraft passengers.

"Once our processes are in place, we will be in a position to help MAF make a more accurate assessment of the risk that soil which is brought in on items such as muddy boots, tents and bikes really poses to New Zealand," Mark says.

B3 has a wide range of science expertise to draw on for such work. Collaborations across B3 enable experts in bacterial and fungal DNA extraction, nematologists, weed ecologists and entomologists to work together on the problem.

Trans-Tasman collaboration for Better Border Biosecurity: Distance diagnostics the goal

A valuable trans-Tasman collaboration with the Australian National Plant Biosecurity Cooperative Research Centre (CRC) was strengthened in February with the participation by two New Zealand scientists in a CRC workshop to discuss new research initiatives for distance diagnostics.



Remote microscopy image.

"Rapid recognition of plant pests is critical to ensure the right response is made to a potential pest incursion at New Zealand's borders," says Dr Karen Armstrong of the Bio-Protection Centre (Lincoln University). She took part in the workshop with AgResearch's Dr Cor Vink.

"If quarantine officers had access to good tools at the border this could make rapid and accurate diagnoses much more efficient when faced with an unfamiliar pest, and the chances of preventing that incursion are much greater."

The research of Drs Armstrong and Vink forms part of the Better Border Biosecurity (B3) programme, a collaboration of five research partners and a range of end user organisations focused on developing new tools and techniques to improve New Zealand's border security as it relates to new plant pests and diseases (see page 20 of this issue).

Remote access microscopy via live video link.

Tools for the front line

"While it's not possible for experts in pest identification to sit alongside quarantine officers on the front line at ports and airports, it is possible to provide tools which help them do their job more effectively," Karen says.

Areas of research being progressed by the Australians include remote microscopy. This tool enables a quarantine officer to place the pest of interest under a microscope so it can be examined remotely in real time by an expert in another institution. The expert can then advise the officer so the appropriate action could be taken.

On-line image libraries are another example. Libraries such as PaDIL offer pest recognition without the use of scientific keys. It provides high-quality comparative images of a pest, giving officers enough information to decide whether they need to seek further guidance from a plant pest or disease expert.

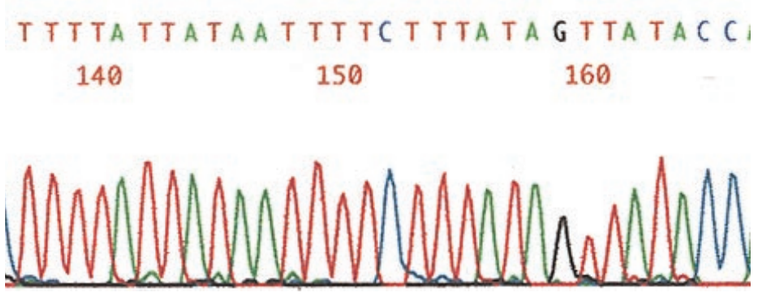
Building relationships

The Australian workshop was an important step in building the relationship with the National Plant Biosecurity CRC. "We have such common interests with Australia when it comes to biosecurity that it makes really good sense to collaborate. By working together we have the critical research mass we need to achieve good results," Karen says.

"In some areas, such as remote microscopy and image libraries, Australia is more advanced than New Zealand. In comparison, we are more advanced in some areas of molecular diagnostics.

"In particular, we are developing the use of DNA sequence 'barcodes' for pests that are difficult to distinguish. The DNA barcodes can be entered into a remote, on-line database and a diagnosis received very rapidly. The Australians are not yet doing this – but we are for high-risk pests such as fruit flies and exotic moths.

Comparison of insect head images using the PaDIL on-line image library.



Part of a DNA "barcode" used for rapid, remote diagnosis.

"By understanding what each country is doing, we can avoid redundancy in research effort and focus on areas where additional benefits can be gained."

Plant biosecurity is one of the key research areas being funded by the Australian Government and industry over the next six years, to the tune of $65 million. Dr Sue Worner, also a project leader in B3, as well as in the Bio-Protection Centre at Lincoln University, is so far the only New Zealander to receive funding through this CRC.

Science and technical innovations

Some examples of the tools available and discussed at the workshop include:

- Pests and Diseases Image Library (PaDIL): on-line photos for pest identification: www.padil.gov.au
- Distance diagnosis in the health sector: www.uq.edu.au/coh/
- The Australian Biodiversity Information Facility aims to be a one-stop-shop to access Australian biodiversity data: www.abif.org
- The Centre for Biological Information Technology: www.cbit.uq.edu.au
- LUCID, a software platform for scientific keys useful for identification or diagnosis: www.lucidcentral.org/
- Barcode of Life Database (BOLD), an online workbench for collection, management, analysis, and use of DNA barcodes: www.barcodinglife.com/views/login.php

The Distance Diagnostics workshop was hosted by the CSIRO at the Long Pocket Laboratories in Indooroopilly, Queensland with participants invited from the Australian national and state governments AQIS, OCCPO, Plant Health Australia, SARDI, DAWA and the Queensland, New South Wales and Victoria DPIs, as well as scientists from CSIRO and the University of Queensland.

■ Dr Karen Armstrong, Project Leader Molecular Diagnostics, National Centre for Advanced Bio-Protection Technologies, Lincoln University, phone 03 325 3838 x8390, fax 03 325 3864, Armstron@lincoln.ac.nz

■ http://bioprotection.lincoln.ac.nz

PEOPLE IN BIOSECURITY

Dr Phil Cowan has been appointed to the National Animal Welfare Advisory Committee (NAWAC) for a term expiring on 31 October 2008. Nominated by Landcare Research New Zealand Ltd, he is Landcare's Science Leader – Pest Control Technologies. A researcher with 30 years' experience, Dr Cowan has particular expertise in the management of introduced mammalian pests and the application of new technologies to pest control. He has published 120 refereed publications and 45 contract reports, and received a Royal Society Silver Science and Technology Medal in 2000 for his major contribution to possum research. This appointment fills the vacancy for a person to provide knowledge and experience of environmental and conservation management created by Dr Cheryl O'Connor's resignation from NAWAC when she took up her position with Biosecurity New Zealand's Animal Welfare Group.

Roger Poland has transferred from Biosecurity New Zealand's Post-clearance group to join the Animal Welfare Group as a Senior Adviser. During his 31 years as a veterinarian, he has had a variety of different work experiences, both overseas and in New Zealand. These include clinical practice, supervision of animals in quarantine, and work in the meat industry. For the past 11 years he has led MAF's animal disease surveillance programme.

Wallaceville focus for rapid animal disease response

The National Centre for Biosecurity and Infectious Disease at Wallaceville, near Upper Hutt, has played an important part in safeguarding our economy and environment for over 100 years. Although the farmland surrounding the formerly rural setting at Wallaceville has all but disappeared, the site has retained its key strategic importance and will continue to do so for many years to come.

In 1893, the then Department of Agriculture appointed its first qualified veterinarian JA Gilruth, a recruit from Scotland who falsified his age and became head of the veterinary division at the age of 22. It was Gilruth's persistence over the next ten years that lead to the public health laboratory at Wallaceville being established.

Incursion Investigation Manager Matthew Stone with one of the toolboxes used by IDC veterinarians on their initial visit to a property where a suspected exotic animal disease has been identified..

In the first half of the twentieth century the centre highlighted the link between animal and human health issues, carrying out regular testing, such as examining milk for tuberculosis and mastitis, producing millions of doses of various vaccines and setting up an experimental poultry farm and a quarantine for dogs.

In 1929, building extensions doubled the facilities (additions included four extra labs and an inside toilet), and in 1934 Wallaceville split up into self-contained sections – Diagnostic, Bacteriology, Pathology, Nutrition and Parasitology.

Following World War Two, scientists at Wallaceville carried out important studies in the use of antibiotics on animals and developed a breakthrough in sheep dipping. They were also involved in the development of aerial topdressing using surplus military aircraft.

Research carried out at Wallaceville after 1958 contributed to farm production doubling in the first 25 years after the war. Highlights included the eradication of brucellosis, a bacterial disease causing abortion in cattle, and the diagnosis of scrapie in a quarantined flock of sheep.

Tradition continues

Today, Wallaceville's Investigation and Diagnostic Centre (IDC) continues to play a vital part in protecting New Zealand's economy and safeguarding human and animal health.

IDC's Animal Health Laboratory (AHL) is responsible for identifying or verifying all suspected exotic, new and emerging diseases of livestock, introduced and exotic fauna, bees and aquatic animals. In 2005 the AHL carried out over 43,000 tests.

The laboratory maintains the country's only PC3+ containment lab, which provides a secure environment for test development and the screening of samples for the presence of exotic disease agents. The facility reduces New Zealand's reliance on overseas laboratories for exotic disease testing and speeds up diagnosis.

Access to the PC3 lab is through air locks. The air locks, corridors and laboratories are held at negative pressure with the most highly contaminated areas at lowest pressure. Air flows from the outside of the building through the airlocks and corridors into the laboratories. The exhaust air is filtered through high efficiency particulate air (HEPA) filters to remove potentially contaminated aerosol droplets. The directional air flow ensures that the air in all rooms is changed 20 times every hour.

Investigation team

Wallaceville's Incursion Investigation Team has seven veterinary epidemiologists and a marine specialist is joining the team in July. They manage the investigation of exotic and emerging diseases and pests affecting animals and fauna by investigating reports, mounting responses and developing capabilities.

The Animal Health Lab and Incursion Investigation teams have both recently been involved in important developments in the investigation and diagnosis of suspected foot and mouth disease, or FMD (see below).

An outbreak of FMD has the potential to devastate the New Zealand economy by decreasing agricultural production and stopping exports of animals and animal products. The Reserve Bank estimates that an outbreak of foot and mouth disease could result in a cost of $10 billion and the loss of up to 20,000 jobs within two years.

- Joseph O'Keefe, Animal Health Laboratory Manager, Investigation and Diagnostic Centre, Wallaceville, phone 04 526 5600, joseph.okeefe@maf.govt.nz
- Matthew Stone, Incursion Investigation Manager, Investigation and Diagnostic Centre, Wallaceville, phone 04 526 5600,

Left: Packed and ready: these kits at Wallaceville contain the necessary equipment for collection of good-quality diagnostic samples in the event of a disease response.

Below left: In the event of an exotic animal disease emergency, the Investigation and Diagnostic Centre at Wallaceville is wired up to become the centre of operations. This array of computers is just part of the equipment that is maintained on permanent standby.

Below right: Part of the sophisticated airflow and filtering system that ensures any disease organism remains well and truly contained at the high-security PC3+ laboratory.

Discovery of syndrome in cows strengthens FMD investigation capability

By Andrew McFadden

While the Waiheke Island foot and mouth disease (FMD) hoax attracted widespread publicity, there are in fact many investigations to rule out cases of FMD each year. The main difference is that these are sparked by clinical signs in livestock, rather than hoax letters.

The Investigation and Diagnostic Centre (IDC) at Wallaceville investigates all suspected cases of FMD. On 28 November 2005 they investigated a case that was somewhat different from most other investigations.

A dairy herd was found with oral erosive lesions in 30 out of 397 adult cows. Over a period of two weeks, a large proportion of the herd developed these lesions.

Two of the affected animals had vesicular (blister-like) lesions on the muzzle, a symptom associated with FMD.

The clinical picture of disease present in this herd contrasted with other investigations carried out by the IDC during the previous eight years, aimed at ruling out FMD in cattle. During this period, this is the only investigation where intact vesicles in cattle have been observed. Most investigations involved disease in a single animal, with only one of 50 cattle investigations involving multiple adult cows.

While the number of cows involved and the clinical signs could have been cause for alarm, incursion investigators, assisted by a bovine specialist and IDC scientists, were able to exclude FMD based on several clinical and epidemiological features.

Evidence against the presence of FMD included:

- absence of fever
- no signs of systemic illness
- no effect on milk production
- a small lesion size/diameter
- no lesions in areas of the body other than the oral cavity/skin of the nose and lips.

In addition, no infectious agent was detected using virus isolation, polymerase chain reaction (PCR), electron microscopy (EM) and serological tests.

There have been no other reports of this syndrome in the literature. Knowledge that this syndrome exists may help incursion investigators in future investigations, as they can consider it as a possible cause of disease when excluding FMD.

Rapid, accurate FMD tests developed

By Richard Clough, Veterinary Diagnostician

Molecular biology-based tests are being optimised and developed by Biosecurity New Zealand at the Investigation and Diagnostic Centre Wallaceville for the rapid and accurate diagnosis of foot and mouth disease (FMD). These diagnostic tools are essential if we are to effectively respond to the threat posed by FMD. In the case of a positive diagnosis, early diagnosis gives a valuable head start in efforts to contain and eradicate the disease. And if the diagnosis is negative, the impact on trade from a full-scale alert can be minimised.

Rapid, highly sensitive and specific diagnostic tests are required to confirm or rule out suspected incursions of FMD virus in New Zealand. The technology being developed at Wallaceville involves real-time reverse-transcription-polymerase chain reaction (RT-PCR) assays. The objective of the tests is to quickly and accurately detect nucleic acids of FMD and the other vesicular diseases (i.e. diseases characterised by blister-like lesions) that present identical clinical symptoms. Similar diseases include swine vesicular disease, vesicular stomatitis and vesicular exanthema of swine.

The goal of the project is to optimise TaqMan-based real-time RT-PCR assays that can detect all serotypes or strains of each disease in a highly sensitive and specific manner.

It is important that the assay does not produce false-positive results, but that if infection is present the virus will be consistently detected even at low concentrations. Using inactivated FMD virus from the world FMD reference laboratory, Institute for Animal Health (IAH), Pirbright, United Kingdom, tests were run to show that the assay can detect the virus at very low doses (down to three virus genomes).

Tests on blood and tissues from healthy New Zealand sheep and cattle show that the assay does not generate false-positive signals in uninfected animals. For the tests to be useful, the FMD virus must be differentiated from other diseases causing similar clinical pictures, and the assay has been shown not to produce false-positive signals in the presence of the other vesicular disease viruses or several related viruses.

The assay was also tested at IAH against many strains of FMD virus isolated from clinically affected animals. Results were almost identical to those previously found by IAH scientists using a different PCR protocol. These conclude that the assay is indeed sensitive and specific enough to quickly and accurately determine FMD status in the face of a suspect FMD incursion in New Zealand – a valuable addition to this country's biosecurity toolbox.

Changes in the Biosecurity Strategic Unit

One of the most important findings of the Biosecurity Strategy on its release in 2003 was a lack of strategic capability in the biosecurity system. It identified the need to look ahead, identify all the gaps needing to be filled in the biosecurity system, and to agree priorities across the system. The strategy stressed the need for this capability across the whole of the new system.

The Biosecurity Strategic Unit (BSU) was set up to take on this role as a unit independent of Biosecurity New Zealand (BNZ), reporting to the Director-General until a decision was made on its final placement. The need for its independence was stressed at the initial set-up, because of concerns that if it was placed within BNZ it would be quickly absorbed into day-to-day policy work, losing the strategic focus it was set up for.

The review of the BSU's long-term placement has now been completed as part of decisions around MAF's new Strategy and Performance Group (SPG). From 1 January 2006, half of the BSU has formally shifted to become part of the Policy Directorate in BNZ, reporting to Douglas Birnie.

The team will keep the name of the Biosecurity Strategic Unit and will remain a stand-alone unit. The work will remain largely unchanged, focusing on whole-of-biosecurity issues, particularly roles and responsibilities, decision-making systems, legislation and servicing the Biosecurity Chief Executives' Forum, together with other advisory forums.

The other half of the BSU has transferred into the new MAF Strategy and Performance Group where Paul Stocks, who previously led the BSU, has taken on the new position of Assistant Director-General – Strategy.

■ www.maf.govt.nz/biosecurity-strategic-unit/

MAF launches regional pest management website

As a first step in collecting and presenting biosecurity activity and performance data, MAF launched the regional pest management website in April.

The site provides a nationwide picture of regional pest management activity. It shows which pest species are managed, and how, in each region. Visitors can search by species, region or by management programme.

The information is extracted from regional councils' individual regional pest management strategies. The site will be updated as councils update their strategies.

MAF's national biosecurity oversight role requires that it looks across all related activity, not just the Biosecurity New Zealand bits. A new framework that will allow MAF to monitor, measure, review and evaluate the performance of New Zealand's biosecurity activity is being developed.

■ http://biosecurityperformance.maf.govt.nz

A page from the regional pest management website.

Honorary animal degree at Unitec graduation

Bob Kerridge, Chief Executive of the Auckland SPCA and well-known campaigner for the better treatment of animals, received an honorary Bachelor of Applied Animal Technology (BAppAnTech) at a Unitec graduation ceremony in the Auckland Town Hall in April.

Unitec animal welfare professor Natalie Waran said Bob's work made him the logical choice for the honorary degree. "He is well recognised and respected and has been a long-time supporter of the BAppAnTech programme."

Collaboration with the Auckland SPCA has been beneficial for BAppAnTech students, said Professor Waran, and resulted in opportunities to conduct research that has real-world applications.

"Our relationship with the Auckland SPCA has provided students with opportunities to gain practical experience at the centre while studying. We've also been able to develop research projects with Bob and his organisation, such as our nationwide study last year of the effects of fireworks on pets. We have six more research projects in the pipeline this year."

Bob, who became a Member of the New Zealand Order of Merit in 2005, said his honorary degree came as a pleasant surprise. This was the first such ceremony for this qualification, with 13 students receiving their degree as the first graduates of the programme.

Bob Kerridge: logical choice for honorary degree.

World Meat Congress looks to 2020

The sixteenth World Meat Congress was held in Brisbane from 26–29 April 2006. This important international conference enjoyed high-level political support, with attendance by both the Federal Minister of Agriculture and the Queensland State Premier. Media attention included coverage of demonstrators opposed to the meat industry on animal rights grounds, but was balanced by in-depth interviews with all keynote speakers.

Invited New Zealand speakers were Bill Garland and David Bayvel, Director Animal Welfare, Biosecurity New Zealand. Other conference speakers included: Professor David Hughes, Emeritus Professor of Food Marketing, University of London; Dr A Thiermann, President OIE Terrestrial Animal Health Code Commission; Ms N Morgan of the Food and Agriculture Organisation of the United Nations; Mr L Holgaard, Deputy Director-General, Agriculture, European Commission.

Attendance exceeded the expectations of the conference organisers, with over 700 delegates from 35 countries representing government, industry bodies and the business sector. The theme of the conference "2020: Meat the road ahead" addressed important strategic issues involving the consumer, community expectations, supply and trade.

Presenters were chosen to provide their perspective on where the industry will be in 2020 and how regions throughout the world are preparing themselves for future opportunities and challenges.

Matters of particular interest at the conference included:

- Animal welfare along with food safety and environmental issues were seen as major priorities for the meat industry between now and 2020.
- From a retailer perspective (e.g., ASDA/Walmart), animal welfare is a "given" in terms of minimum standards and associated consumer expectations.
- Consumers want a range of alternatives apart from low prices.
- In the United Kingdom, brands are retailer-owned (e.g. Tesco), while in United States they are processor-owned (e.g. Tysons).
- Animal welfare presents a niche market opportunity in premium-priced markets.
- By 2006, developing countries have increased their share of global exports to 47 percent, with South America making the major contribution.
- China is seen to be the major new market opportunity between now and 2020.
- South America (the SA-5 group) will continue to develop as a major export player, with a foot-and-mouth-disease-freedom scenario in 10 years, enabling it to realise its full potential.
- The EU Doha round offer, plus Common Agricultural Policy reform, will result in a cumulative, significant impact on EU agricultural production.
- The importance of traceability was another dominant theme of the conference, with positive comment made regarding initiatives taken in New Zealand and Australia.

The next conference will be held in South Africa in 2008.

■ David Bayvel, Director Animal Welfare, phone 04 8190368, david.bayvel@maf.govt.nz

■ www.2006worldmeatcongress.com.au

WSPA Director-General makes flying visit

Major General Peter Davies, Director-General of the World Society for the Protection of Animals (WSPA), recently made a flying visit to the capital.

Here to promote a proposed declaration on animal welfare, he and SPCA National President Peter Mason met with Agriculture Minister Jim Anderton, Federated Farmers President Charlie Pederson, and MAF officials.

Following unsuccessful attempts over the years by various groups to promote a declaration on the welfare of animals, WSPA took up the challenge in the late 1990s, seeking a mandate from its several hundred member societies from around the world. In 2003, the Philippines Government, with the support of WSPA and RSPCA UK, hosted a successful conference in Manila attended by 22 government delegations, which agreed a proposal for a declaration on animal welfare.

Last year, WSPA proposed a steering group of five countries (Costa Rica, Kenya, India, Czech Republic and Philippines) to champion the declaration to the United Nations. Chaired by the Costa Rican government, the steering group met late in 2005 in Costa Rica and agreed to hold a high-level ministerial conference later this year to adopt a text for a Universal Declaration on Animal Welfare.

The objective of the initiative for a Universal Declaration on Animal Welfare is to achieve global recognition of animals as sentient beings, capable of experiencing pain and suffering, and of animal welfare as an important aspect of the social development of nations worldwide.

An international campaign to promote a declaration on animal welfare is due to be launched at the WSPA Symposium, celebrating the organisation's twenty-fifth anniversary, to be held in London this month.

■ Peter Mason, National President, Royal New Zealand SPCA, president@rnzspca.org.nz

PEOPLE IN BIOSECURITY

John Willmer has joined the Post-clearance Directorate of Biosecurity New Zealand (BNZ) as Senior Adviser – Marine, Pest Management. John's position is a new appointment and will focus on working across government agencies and with stakeholders to develop New Zealand's marine pest management capability. John comes to BNZ from the Policy Unit of the New Zealand Seafood Industry Council, where his portfolio included environmental policy (including biosecurity), aquaculture, fisheries and industry development. Prior to this, John has built up a wide range of experience working in various resource management and science roles for central government agencies, a research institution and an iwi authority. John has a BSc in zoology and ecology, and an MSc in resource management focusing on marine issues.

Strong representation at SPCA conference

Biosecurity New Zealand's strong relationship with the Royal New Zealand Society for the Prevention of Cruelty to Animals (SPCA) was reflected in its representation at the SPCA's seventy-third Annual Conference and annual general meeting on 13 and 14 May, in Christchurch.

Five staff from the Animal Welfare and the Compliance and Enforcement groups attended the conference, which was opened by Agriculture Minister Jim Anderton.

During his presentation, Mr Anderton emphasised New Zealand's dependence on agriculture and the need to be a global leader in animal management, to lift the value of primary sector production. The more that New Zealand products meet the higher standards of food quality, environmental responsibility and animal welfare increasingly demanded by global consumers, the better it is for our economy, he said. The SPCA had worked constructively with the Government over the years and Mr Anderton noted this Government's appreciation for its contribution.

Dr Hugh Wirth, President of the RSPCA (Australia) and the World Society for the Protection of Animals, identified the following key issues confronting animal welfare movements worldwide:

- fostering and appropriately recognising volunteer participation
- supporting international animal welfare developments (for example, growing interest in animal welfare in Asia)
- adopting 'global thinking' and applying it domestically.

Other highlights of the conference included:

- tributes to SPCA inspectors Jim Green and Alan Diack, for completing 50 years' service each with the SPCA (including, in Mr Diack's case, several years of service with MAF)
- an update from Jenny Campbell, creator of the *Smarter Than Jack* book series, which has so far raised $380,000 for animal welfare organisations around the world, including $120,000 for the SPCA
- a surprise visit from 'dancing ex-All Black' Norm Hewitt, who will front the new SPCA campaign launched at the conference: 'It's the Norm'

SPCA inspector Jim Green receives his award for 50 years' service with the SPCA. Pictured from left are Royal New Zealand SPCA President Peter Mason, Mr and Mrs Green and Minister of Agriculture, Jim Anderton. Photo: Royal New Zealand SPCA.

- a presentation by Dr Mark Fisher on the welfare of animals in extreme climatic conditions, including types of shelter and the relative advantages and disadvantages, for both ewes and lambs, of pre-lambing shearing.

The SPCA movement, which will be 200 years old in 2024, is one of only four surviving organisations from a raft of charities established during Victorian times (the others being the Salvation Army, the Red Cross and the Society for the Blind). While it has retained its core focus of preventing animal cruelty, the Royal New Zealand SPCA today undertakes, with MAF, a key enforcement role under the Animal Welfare Act 1999, as well as carrying out educational and campaigning initiatives.

■ Joanna Tuckwell, Policy Adviser Animal Welfare, phone 04 819 0369, fax 04 819 0747, joanna.tuckwell@maf.govt.nz

UPDATES

Revised import health standard for consultation

MEDICAGO (ALFALFA/LUCERNE) SEEDS FROM ALL COUNTRIES

An amendment to the import health standard for seed for sowing:

■ www.maf.govt.nz/biosecurity/imports/plants/standards/155-02-05.pdf

and seed for consumption, feed or processing:

■ www.maf.govt.nz/biosecurity/imports/plants/standards/bnz-gcfp-phr.pdf

is under consultation until 14 July 2006.

This recommendation proposes the introduction of mandatory testing for genetic modification of imported Medicago sativa seed.

For the draft documents:

■ www.biosecurity.govt.nz/strategy-and-consultation/consultation/ihs

Please provide comments by 14 July 2006 to:

plantimports@maf.govt.nz

New import health standards

BUFFALO SEMEN FROM ITALY (BUFSEMIC.ITA)

The import health standard (IHS) for buffalo semen from Italy dated 27 March 2006 has been issued for trade and is now available at:

www.biosecurity.govt.nz/commercial-imports/import-health-standards/search

This IHS fully complies with the import requirements for bovine semen from the European Community. The IHS dated 3 October 2001 was revoked in December 2004 as it no longer complied with New Zealand's import conditions.

DAIRY PRODUCTS FOR HUMAN CONSUMPTION FROM SPECIFIED COUNTRIES (DAIEDIIC.SPE)

The IHS for dairy products from specified countries dated 10 April 2006 has been issued for trade and is now available from:

■ www.biosecurity.govt.nz/commercial-imports/import-health-standards/search

This IHS replaces that dated 2 December 2005.

The manager of the manufacturing premises is now required to certify to the processing and ingredients of the dairy products. This declaration is then certified by an official veterinarian. Minor amendments have also been made.

ALPACAS AND LLAMAS FROM AUSTRALIA (LAMANIIC.AUS)

DEER FROM AUSTRALIA (DEEANIIC.AUS)

GOATS FROM AUSTRALIA (GOAANIIC.AUS)

SHEEP FROM AUSTRALIA (SHEANIIC.AUS)

These IHSs were amended to clarify that the import requirements for testing of faeces for eggs of resistant endoparasites included testing for the eggs of liver fluke, and to remove the option to use the complement-fixation test for Q fever. The format, MAF websites and management responsibilities were updated as were the requirements for shipping containers to be made of timber that meets New Zealand's wood packaging IHS.

This standard is now dated 8 May 2006.

■ Animal Imports, Biosecurity New Zealand, phone 04 819 0459, fax 04 819 0662, imports@maf.govt.nz

SOIL, ROCK, GRAVEL, SAND, CLAY, PEAT AND WATER FROM ANY COUNTRY (BMG-STD-SOWTR)

Biosecurity New Zealand revised the above standard on 12 May 2006. The following revisions have been made:

- Requirements for raw peat from specific countries have been added.
- Requirements for processed peat products have been removed from MAF Quarantine Service's process procedures and added to the IHS. This standard is now dated 12 May 2006 and replaces that dated July 2002.

■ Plant Imports, Biosecurity New Zealand, phone 04 819 0458, fax 04 819 0662, plantimports@maf.govt.nz

Import health standards reissued

IMPORTATION OF NURSERY STOCK

The IHS was amended and the following changes made:

- risk mitigation measures and host list for *Phytophthora ramorum*
- risk mitigation measures for *Xylella fastidiosa*
- risk mitigation measures and host list expansion for guava rust *(Puccinia psidii)*
- a review of the *Caladium* schedule
- removal of the non-regulated pest lists.

IMPORTATION OF GRAIN FOR CONSUMPTION, FEED AND PROCESSING – PLANT HEALTH REQUIREMENTS

A number of amendments were made to address editorial, grammatical and minor technical issues in this standard including:

- removal of the non-regulated pest lists and inclusion of a link to the Biosecurity Organism Imported Commodity register
- update of the regulated pest list for *Phaseolus, Pisum, Hordeum, Triticum* and *Vicia*
- removal of unnecessary additional declarations
- inclusion of an option for seed to be imported directly for processing (*Helianthus, Lens, Medicago, Phaseolus, Pisum, Vicia, Vigna*)
- transfer of the requirement for ISTA certification to the PIT-GFP-ISR standard
- inclusion of a section for equivalency determination.

■ Plant Imports, Biosecurity New Zealand, phone 04 819 0458, fax 04 819 0662, plantimports@maf.govt.nz

Plant containment standard reissued

MAF Biosecurity New Zealand/ERMA New Zealand Standard 155.04.09 – Containment Facilities for New Organisms (including genetically modified organisms) of Plant Species.

This standard is dated 12 May 2006 and replaces the containment facilities standard dated 26 November 2003. The significant amendment from the previous version is the updated form for the consent to disclosure of personal information.

Import risk analysis

PASSERINE HATCHING EGGS FROM THE EUROPEAN UNION

There was only one submission received with regard to this import risk analysis. The submission did not challenge the results of the risk analysis but stated the need to ensure that the standards were adhered to by importers. As result, MAF will not be producing a review of submissions.

■ Martin Van Ginkel, Technical Support Officer, Risk Analysis, Biosecurity New Zealand, phone 04 819 0504, Martin.van_Ginkel@maf.govt.nz

Codes of ethical conduct – approvals, notifications and revocations since the last issue of *Biosecurity*

All organisations involved in the use of live animals for research, testing or teaching are required to adhere to an approved code of ethical conduct.

CODES OF ETHICAL CONDUCT APPROVED: Nil

TRANSFERS OF CODE OF ETHICAL CONDUCT APPROVED: Nil

CODE HOLDER NAME CHANGES: Nil

AMENDMENTS TO CODES OF ETHICAL CONDUCT APPROVED: Nil

NOTIFICATIONS TO MAF OF MINOR AMENDMENTS TO CODES OF ETHICAL CONDUCT:

- Massey University.

NOTIFICATIONS TO MAF OF ARRANGEMENTS TO USE AN EXISTING CODE OF ETHICAL CONDUCT:

- Animal Health Research Ltd (to use PharmVet Solutions' code)
- Four Rings Enterprises Ltd (to use PharmVet Solutions' code)
- Intervet NZ Ltd (to use PharmVet Solutions' code).

CODES OF ETHICAL CONDUCT REVOKED OR EXPIRED OR ARRANGEMENTS TERMINATED OR LAPSED:

- Animal Health Services Centre
- Central Southland Veterinary Services
- Chemeq Ltd
- Cook, Trevor
- Fonterra Innovation
- Impian Technologies Ltd
- Newall, Michael
- Plade Holdings Ltd
- Robbins, Lloyd
- Stockguard Laboratories (NZ) Ltd.

APPROVALS BY THE DIRECTOR-GENERAL OF MAF FOR THE USE OF NON-HUMAN HOMINIDS: Nil

APPROVALS BY THE MINISTER OF AGRICULTURE OF RESEARCH OR TESTING IN THE NATIONAL INTEREST: Nil

■ Linda Carsons, Senior Policy Adviser, Animal Welfare, phone 04 8190370, fax 04 8190747, linda.carsons@maf.govt.nz

Codes of welfare – update on development, issue and consultation since the last issue of *Biosecurity*

CODES OF WELFARE ISSUED: Nil

CONSULTATION ON CODES OF WELFARE:

- Deer code: final code anticipated to be presented to Minister of Agriculture in the second quarter of 2006
- Cat code: final code anticipated to be presented to Minister of Agriculture in the second quarter of 2006
- Commercial slaughter code: second consultation period closed 27 February 2006.

CODES OF WELFARE UNDER DEVELOPMENT:

- Dogs
- Dairy cattle
- Transport of animals by land.

■ Cheryl O'Connor, Programme Manager Animal Welfare, phone 04 819 0371, fax 04 819 0747, cheryl.o'connor@maf.govt.nz

Animal Identification Schemes – notification of changes proposed

MAF approves new animal identification schemes or amendments to existing schemes under the Biosecurity Act 1993. Recent changes proposed are:

- official recognition of AgriQuality Limited scheme for animals
- changes to Animal Health Board current scheme for cattle and deer for bovine Tb.

For further information see article on page 8. Comments are invited until 30 June 2006.

■ Susan Keenan, Senior Policy Analyst, Biosecurity New Zealand, phone 04 819 0408, fax 04 819 0730, susan.keenan@maf.govt.nz

Pest watch: 18/03/2006 - 05/05/2006

Biosecurity is about managing risks – protecting the New Zealand environment and economy from exotic pests and diseases. Biosecurity New Zealand devotes much of its time to ensuring that new organism records come to its attention, to follow up as appropriate. The tables below list new organisms that have become established, new hosts for existing pests and extension to distribution for existing pests. The information was collated during 18/03/2006 – 05/05/2006, and held in the Plant Pest Information Network (PPIN) database. Wherever possible, common names have been included.

ANIMAL KINGDOM RECORDS 18/03/2006 – 05/05/2006

Validated new to New Zealand reports

Organism	Host	Location	Submitted by	
No new to New Zealand records during this period.				

New host reports

Organism	Host	Location	Submitted by	
No new host records during this period.				

Extension to distribution reports

Organism	Host	Location	Submitted by	
Doleromyrma darwiniana (Darwin's ant)	Pantry cupboards	Wellington		Associated with ports from Whangarei to Lyttleton. Also spreading north from Auckland.
Linepithema humile (Argentine ant)	Inanimate host	Gisborne	IDC (general surveillance)	Widely distributed throughout northern North Island. Also present in most major cities.
Pheidole rugosula (big headed ant)	Dead beetle	Gisborne	IDC (general surveillance)	Currently concentrated in Auckland, but found in cities as far south as Christchurch.

■ Nasser Ahmed, Technical Adviser, Biosecurity New Zealand, ph 04 819 0550, nasser.ahmed@maf.govt.nz

PLANT KINGDOM RECORDS 18/03/2006 – 05/05/2006

Validated new to New Zealand reports

Organism	Host	Location	Submitted by
Rodolia koebelei (ladybird beetle)	*Pittosporum crassifolium* (karo)	Auckland	IDC (general surveillance)
Coccidoctonus psyllae (encyrtid wasp, no common name)	*Cardiaspina fiscella* (brown lace lerp)	Auckland	Landcare Research
Phytophthora kernoviae (chromist)	*Annona cherimola* (cherimoya, custard apple)	Northland	IDC (general surveillance)
Megadrymus terraereginae (seed bug, no common name)	Leaf litter under *Ficus macrophylla* (Moreton Bay fig)	Auckland	IDC (general surveillance)

Significant find reports

Organism	Host	Location	Submitted by
Teia anartoides (painted apple moth)	Bait trap	Auckland	MAF (painted apple moth surveillance programme)

New host reports

Organism	Host	Location	Submitted by
Nectria cinnabarina (coral spot)	*Idesia polycarpa* (wonder tree)	Auckland	IDC (general surveillance)
Fusarium anthophilum (fusarium)	*Chrysalidocarpus lutescens* (golden cane palm, golden yellow palm)	Northland	Directed (general surveillance)
Trichothecium roseum (pink mould)	*Sophora microphylla* (kowhai)	Northland	IDC (general surveillance)
Carlavirus Verbena latent virus (proposed name, VeLV)	*Gynura* sp. (velvet plants)	Auckland	IDC (general surveillance)
Valsa ceratosperma (valsa canker)	*Fraxinus* sp. (ash)	Auckland	IDC (general surveillance)
Phoma exigua var. *exigua* (blight, leaf spot, mouldy core, stem spot)	*Vaccinium* sp. (no common name)	Northland	IDC (general surveillance)
Phytophthora citricola (Phytophthora collar rot, crown rot, fruit rot, root rot)	*Chamaecyparis lawsoniana* (Lawson's cypress)	Auckland	IDC (general surveillance)
Phytophthora cryptogea (Phytophthora root and collar rot, phytophthora root rot)			
Botryosphaeria parva (Botryosphaeria rot)			
Tobravirus tobacco rattle virus (tobacco rattle virus (TRV))	*Paeonia* sp. (peony)	Mid Canterbury	IDC (general surveillance)
Brevipalpus essigi (no common name)	*Callicarpa* sp. (beauty berry)	Bay of Plenty	IDC (general surveillance)
Liogramma zelandica (no common name)	*Quercus palustris* (pin oak, Spanish oak)	Waikato	Ensis

New host reports

Organism	Host	Location	Submitted by
Dicranosterna semipunctata (leaf beetle)	*Acacia koa* (no common name)	Northland	Ensis (high risk site surveillance)
Ceroplastes sinensis (Chinese wax scale)	*Laurus nobilis* (bay, laurel, bay tree, bay leaf tree)	Bay of Plenty	Ensis (high risk site surveillance)
Dicranosterna semipunctata (leaf beetle)	*Paraserianthes lophantha* (brush wattle)	Bay of Plenty	Ensis (high risk site surveillance)
Parasaissetia nigra (Nigra scale)	*Pittosporum x variegatum* (no common name)		Ensis (high risk site surveillance)
Coleosporium senecionis (no common name)	*Senecio hypoleucus* (no common name)	Mid Canterbury	Ensis (high risk site surveillance)
Cephaleuros virescens (algal leaf spot, red rust)	*Ilex aquifolium* (holly)	Hawke's Bay	Ensis (high risk site surveillance)
Gastrosarus nigricollis (Cerambycid beetle)	*Acacia floribunda* (gossamer wattle)	Mid Canterbury	Ensis (high risk site surveillance)
Pestalotiopsis sp. (no common name)	*Eucalyptus* sp. (eucalyptus, gum tree)	North Canterbury	IDC (general surveillance)
Ceroplastes sinensis (Chinese wax scale)	*Callistemon* sp. (no common name)	Auckland	Ensis (high risk site surveillance)
	Tristaniopsis laurina (no common name)	Auckland	
Cosmospora sp. (no common name)	*Myrsine chathamica* (no common name)	Chatham Islands	Ensis (special survey)
Strepsicrates macropetana (eucalyptus leafroller)	*Eucalyptus radiata* (eucalyptus, gray peppermint)	Rangitikei	Ensis (exotic forest survey)
Cucumovirus cucumber mosaic virus (cucumber mosaic virus (CMV))	*Macropiper excelsum* (kawakawa)	Mid Canterbury	IDC (general surveillance)

Extension to distribution reports

Organism	Host	Location	Submitted by
Naohidemyces vaccinii (hemlock – blueberry rust)	*Vaccinium corymbosum* (highbush blueberry)	Northland	IDC (general surveillance)
Cylindrocladiella parva (root rot)	*Vitis vinifera* (grape)	Central Otago	IDC (general surveillance)
Volutella buxi (no common name)	*Buxus sempervirens* (box, common boxwood)	Gisborne	Ensis (high risk site surveillance)
Illeis galbula (fungus-eating ladybird beetle)	*Crinodendron patagua* (white lilytree, lily-of-the-valley tree)	Gisborne	Ensis (high risk site surveillance)
Nematus oligospilus (willow sawfly)	*Salix* sp. (willow)	Otago lakes	Ensis (high risk site surveillance)
Emplesis bifoveata (no common name)	*Acmena smithii* (Acmena, lilly-pilly, monkey apple, white monkey apple)	Bay of Plenty	Ensis (high risk site surveillance)
Spilocaea oleaginea (olive scab, peacock spot)	*Olea europaea* (African olive, olive)	Mid Canterbury	Ensis (high risk site surveillance)
Nematus oligospilus (willow sawfly)	*Salix* sp. (willow)	Northland	Ensis (high risk site surveillance)
Cosmospora sp. (no common name)	*Myrsine chathamica* (no common name)	Chatham Islands	Ensis (special survey)
Coryneum betulinum (no common name)	*Betula pendula* (silver birch)	Mid Canterbury	Ensis (high risk site surveillance)
Acrocercops laciniella (black butt leaf miner)	*Eucalyptus fraxinoides* (eucalyptus, white ash)	Wellington	Ensis (exotic forest survey)
Cardiaspina fiscella (brown lace lerp)	*Eucalyptus deanei* (Deane's gum, eucalyptus)	Rangitikei	Ensis (exotic forest survey)
Phylacteophaga froggatti (eucalyptus sawfly, leaf blister sawfly)		Rangitikei	

■ Eleanor Morrison, Technical Support Officer, Biosecurity New Zealand, phone 04 819 0551, eleanor.morrison@maf.govt.nz

Exotic disease and pest emergency hotline: 0800 809 966
Animal welfare complaint hotline: 0800 327 027
www.biosecurity.govt.nz