ISSUE #2 AUGUST 2022

FOREST OWNERS ASSOCIATION

NEW ZEALAND FARM FORESTRY ASSOCIATION

Forest Biosecurity News

Welcome

Forest Biosecurity News is for people working in plantation forestry, as well as others with an interest in forest biosecurity. We aim to keep readers up-to-date on biosecurity topics and issues, and help those operating in forestry to proactively manage and reduce their biosecurity risk. We will provide insights and updates on forest biosecurity readiness, surveillance, responses, investigations, science, and government industry agreements.

What's inside

INTRODUCTIONS

Introducing John Simmons: Chair, Forest Biosecurity Committee

We welcome John Simmons as the new Chair of the Forest Biosecurity Committee, a role he took up in February 2022.

John has considerable biosecurity experience, gained from roles at Waikato Regional Council, the Maungatautari Ecological Island Trust, chairing the National Possum Control Agencies in the 1990s, and a long involvement with the NZ Farm Forestry Association. He is now an associate consultant with Better Biosecurity Solutions Ltd.

"It's going to be a challenging assignment!" admits John, "but the Committee benefits from its interested, experienced and passionate membership, supported by a great secretariat. Biosecurity is such a significant area for the forest industry, and even though we are alert to the risks, this doesn't lessen the need for industry leadership. I see one of my key roles as increasing liaison and coordination between all types of forestry, including farm forestry, carbon forestry and indigenous forestry."

> **"I see one of my key roles as increasing liaison and coordination between all types of forestry, including farm forestry, carbon forestry and indigenous forestry"**

Previous Chair, Paul Adams, relinquished the role when he was appointed Research and Development Manager with Forest Owners Association.

This regular newsletter is for people working in plantation forestry, as well as others with an interest in forest biosecurity. We aim to keep readers up-to-date on biosecurity issues, and help those operating in forestry to proactively manage and reduce their biosecurity risk.

We will provide insights and updates on forest biosecurity readiness, surveillance, responses, investigations, science and government industry agreements.

supported by forestgrowers commodity levy

INTRODUCTIONS

Introducing Ben Doherty: Specialist Forest Health Adviser, Te Uru Rākau – New Zealand Forest Service

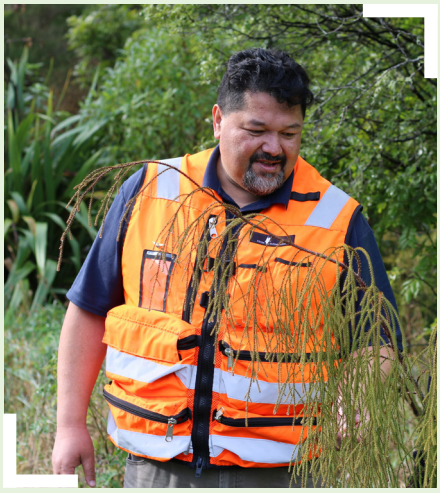
Ben Doherty has been appointed as Specialist Adviser Forest Health for Te Uru Rākau – New Zealand Forest Service (TUR-NZFS).

Ben is a third-generation forester and grew up in the forests around Murupara. His upbringing instilled a strong sense of mātauranga Māori which he brings to the role along with many years' experience of forest health surveillance and forestry operations. Ben has most recently been a team leader for TUR-NZFS in the South Island, involved largely in overseeing new planting projects in the One Billion Trees programme.

In this new national role, Ben will provide strategic and technical leadership to support the development of forest health advice within TUR-NZFS. His role includes:

- providing independent advice within MPI, and across government and other sectors
- working on forest health and biosecurity strategies
- supporting the delivery of forest health/biosecurity programmes across TUR-NZFS, MPI, and industry including Māori
- contributing to training advisers in TUR-NZFS.

Ben is currently the TUR-NZFS representative on the Forest Biosecurity Committee.



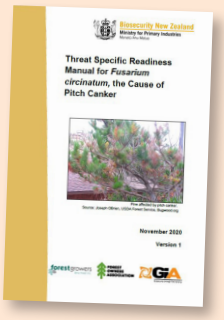
PRIORITY PESTS

Pitch canker: Readiness manual now available

The pitch canker readiness manual – *Threat Specific Readiness Manual for* Fusarium circinatum, *the cause of Pitch Canker* – is now available on the FOA website.

The manual was developed by the FOA in collaboration with Biosecurity NZ under the GIA framework.

https://www.nzfoa.org.nz/resources/file-libraries-resources/forest-biosecurity/866-pitch-canker-readiness-manual/file



PRIORITY PESTS

Lepidoptera readiness

There are over 500,000 species of moths and butterflies, collectively known as Lepidoptera.

From the late 1990s to the early 2000s, New Zealand dealt with several moth incursions considered a threat to plantation forestry. White spotted tussock moth, painted apple moth, fall webworm, and Asian spongy moth (formerly Asian Gypsy Moth) were all successfully eradicated, but at significant cost and in some cases controversially, as eradication involved spraying urban areas with a biological control agent Btk (*Bacillus thuringiensis* var. *kurstaki*).

FOA has been working with MPI and other GIA industry partners over the past 18 months to compile a comprehensive stocktake of knowledge of invasive moths, and to a lesser extent butterflies. The stocktake identified actions that could improve readiness and response for a future Lepidoptera incursion. Some high priority issues are now being addressed, including:

- identifying and prioritising control tools and ensuring available tools can be rapidly deployed. The aerial application of Btk, probably using UAVs or helicopters, is currently seen as the most useful and reliable tool to investigate
- agreeing Lepidoptera groupings and priority species for generic readiness and response planning. For example, many moth species attack low-growing crops and form armies, whereas moths most relevant to plantation forestry live in treetops and require different control strategies.

Targeted engagement with Māori and affected communities is also a high priority.

Image sources:
Asian spongy moth – https://www.insectimages.org/browse/detail.cfm?imgnum=5445757
Nun moth – https://www.inaturalist.org/observations/35245189

Asian spongy moth (Lymantria dispar asiatica) – *(formerly the Asian Gypsy Moth).*

Nun moth (Lymantria monarcha).

Nun moth (Lymantria monarcha).

Biosecurity Training

People working in and around forests who are mindful of biosecurity threats are the people most likely to notice anything unusual and alert us early to potential new pests and diseases.

The Forest Biosecurity Committee recognises how important it is that these people are well-trained and cognisant of biosecurity threats.

As a result, SPS Biota were engaged to develop some basic biosecurity training for people working in and around forests. This training aims to provide:

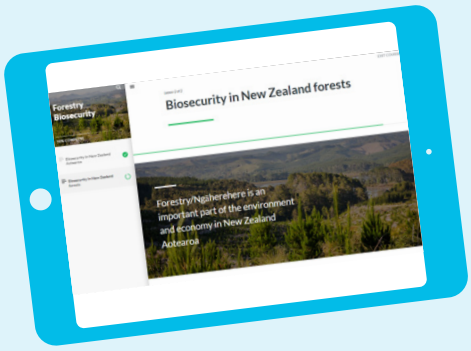
- a general awareness of biosecurity
- an understanding of what to recognise as 'unusual'
- how to report a possible threat so that it can be investigated by a biosecurity expert.

Two forms of training are available:

1. Online: the online training modules provide a foundation for forest biosecurity, observations, and reporting. Access to these modules is free and accessible on SPS Biota's eLearning hub (https://spsbiota.co.nz/pages/elearning-hub). Registration is quick and easy and is required to access the training. Users receive a certificate on completion.

2. Face-to-face: SPS Biota offer face-to-face training to further develop skills beyond the online training. This is ideal for training small teams or groups. The training can be customised to suit your needs, but is generally a half-day session. Costs are user pays and will generally depend on the nature and location of the training.

SPS Biota also offer additional services to manage and coordinate staff training records (i.e., verify completion, currency, refreshers etc.) which could be valuable to larger organisations seeking to ensure that their staff or contractors are familiar with biosecurity risk management.



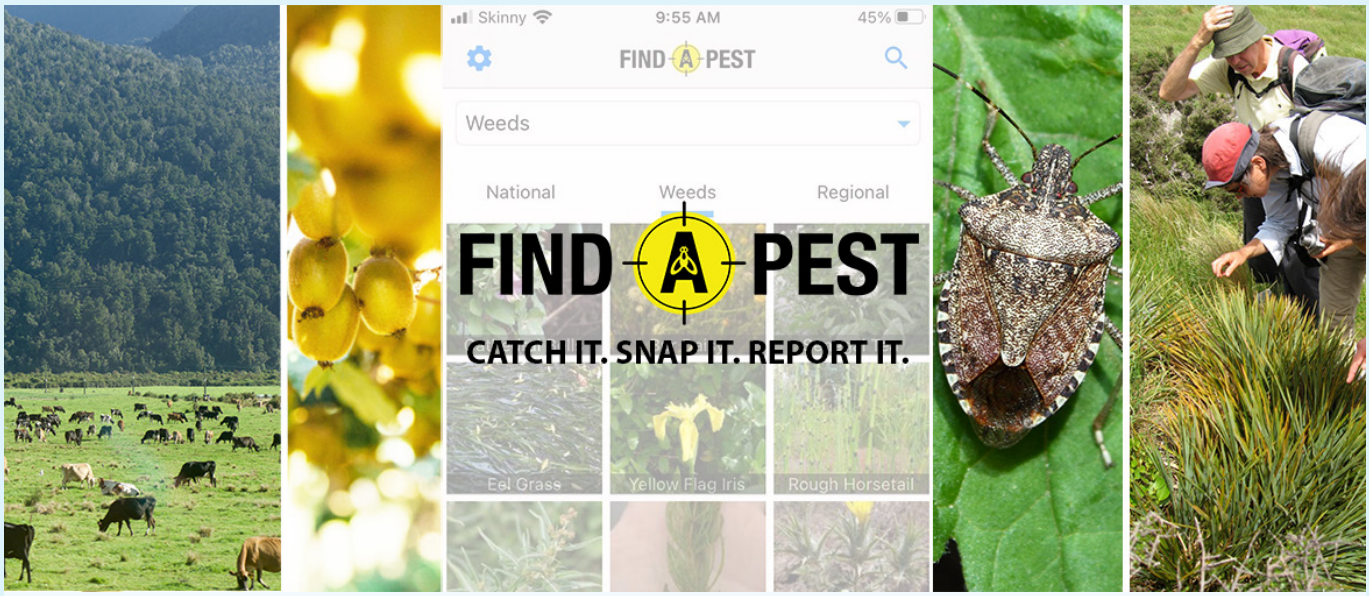
Growing our biosecurity culture

The Forest Biosecurity Committee recently partnered with SPS Biota and Find-A-Pest to attend the recent Safetree and FICA conference and promote forest biosecurity, forest biosecurity training, and the Find-A-Pest mobile reporting app.

Our messages aligned well with the 'Growing our Culture' conference theme. While the conference focused on health and safety culture of our people, biosecurity is about the health and safety of our forests. Protecting forests from biosecurity threats is everyone's responsibility. We wanted to reinforce the message that the more we proactively reduce the biosecurity risk that we all pose when operating in our forests, the lower the likelihood we will introduce or spread pests or diseases that could ultimately harm our livelihoods.

Being vigilant and reporting the unusual will also increase the chances that we will detect a pest or disease early enough to contain or eradicate it.

Image: Abigail Evans – Find-A-Pest, Lucy Aukett – SPS Biota, and Brendan Gould – FOA/FGLT at the shared biosecurity stand at the Safetree/ FICA conference.



The Find-A-Pest app – encouraging its use

In the March 2022 Forest Biosecurity News, we introduced the Find-A-Pest mobile reporting app. For more details and to download the app visit https://www.findapest.nz.

Once you have downloaded the app and registered (with an iNaturalist NZ account – https://inaturalist.nz) it's a simple matter of pointing, clicking, and submitting your image of any unusual insects or symptoms, and then waiting for a potential identification.

Images are screened by people familiar with major forestry pests and disease symptoms. If they suspect something of concern, it will be followed up by biosecurity experts. If not, images are redirected to iNaturalist NZ for identification. iNaturalist NZ is the largest repository of citizen-recorded biodiversity observations in New Zealand and new reports add to this nationally valuable dataset of native and introduced species.

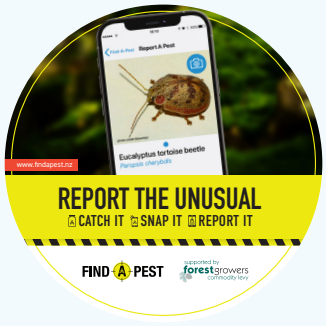
One of the biggest challenges we have is that very few people will encounter a new biosecurity issue or something they suspect might be new. Who is likely to download a reporting app that they may never use?

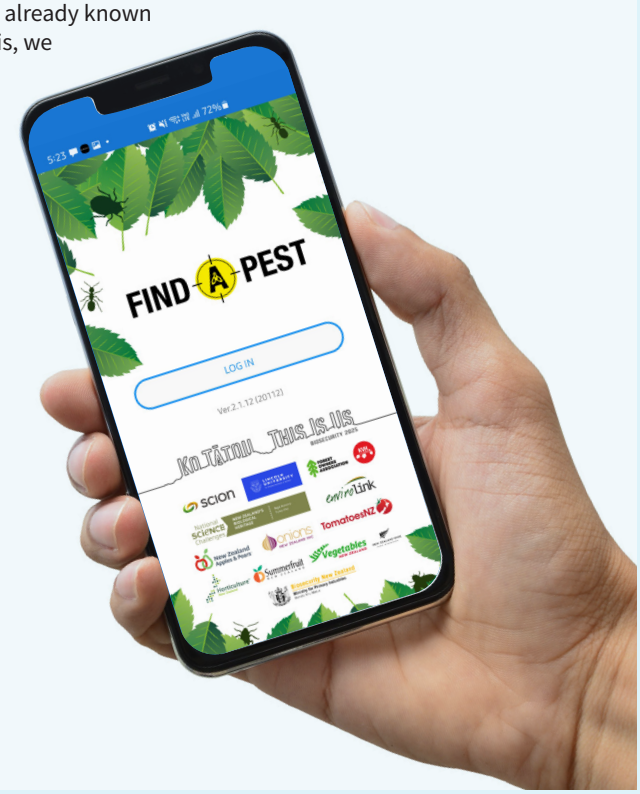
> **"This, we hope, will get people into the habit of reporting pest insects or weeds they encounter in their forests or gardens"**

To address this we are promoting the Find-A-Pest app to report already known pests in New Zealand. This, we hope, will get people into the habit of reporting pest insects or weeds they encounter in their forests or gardens.

This should also increase the chances that they will report new biosecurity issues if encountered. It also allows for everyday reports to contribute to our knowledge of the distribution or range expansions of established pests.

We have several Eucalyptus beetle pests established in New Zealand which are ideal candidates for reporting, as well as a new beetle (*Trachymela sp*,) first detected in Nelson last year. Capturing these in Find-A-Pest will improve our knowledge of their distribution across New Zealand and may help track their rate of spread.





Images: Report Eucalyptus beetles using Find-A-Pest.

Remembering those lessons: Nectria in the southern South Island

CONTRIBUTOR: BRENT ROGAN, SPS BIOTA

This winter season, SPS Biota Forest Health Advisors have been undertaking structured surveillance in forests in the southern South Island.

It is common to encounter *Corinectria fuckeliana*, formerly known as *Neonectria fuckeliana* during these surveys as fruiting structures of the fungus can easily be found on windthrow and other debris. In these instances, the fungus is acting as a saprophyte. It is relatively rare these days to find the fungus acting as a pathogen apart from occasional infection of storm-damaged stems. Readers may be aware that 'nectria' was of great concern for many years until, through research, we started to understand the biology of the organism and adjust silvicultural practices accordingly.

From time to time such lessons are forgotten or forest staff are unaware of the progress made in years gone by. Case in point, during a recent trip in the deep south, I encountered significant stem necrosis and associated malformation associated with a pruning lift (see images). It is not uncommon to get the odd mild canker but it's very rare now to see such widespread cankering and malformations post prune. Past research taught us to keep pruning wounds as small as possible and to avoid pruning during winter; failure to do this can result in the fungus becoming the problem found here.

Images: Cankers and symptoms of *Corinectria fuckeliana* infection. Source Brent Rogan

Red needle cast: a research update from Scion

CONTRIBUTORS: STUART FRASER, EMILY MCLAY, DARRYL HERRON AND JUDY GARDNER, SCION

Red needle cast (RNC) (caused by *Phytophthora pluvialis*) was observed throughout New Zealand in 2021, but was generally less severe than in 2017 when the last large outbreak occurred.

Scion received reports of disease expression and samples from SPS Biota surveyors from across the country and found disease severity in the south of the South Island was the worst seen to date. The disease was detected in Fiordland for the first time. It also remained prominent in large patches near the Gisborne/Hawke's Bay border. Frequent monitoring in this region showed that symptoms appeared in March, peaking in mid-August. In contrast, symptoms developed later in the Central North Island and did not peak until early October, a similar pattern to the last few years.

Research by Scion under the Resilient Forests Programme focuses on disease epidemiology (understanding drivers of outbreaks), remote sensing for disease detection and monitoring, and the efficacy of copper as a control method. New RNC data will be incorporated into Scion's epidemiological model, which aims to forecast disease based on real-time inputs to support control activities.

Copper a control option for red needle cast

Little RNC was observed in our copper control trials in 2021, limiting any conclusions for this year, but previous work suggests copper may offer effective control. A recent open access paper by Scion researchers has shown that low-volume aerial applications of cuprous oxide can reduce the severity of the disease.

'Efficacy and optimal timing of low-volume aerial applications of copper fungicides for the control of red needle cast of pine'. *New Zealand Journal of Forestry Science* 52: 18 https://nzjforestryscience.nz/index.php/nzjfs/article/view/211

Phytophthora pluvialis detected in the UK for the first time

In September 2021, *P. pluvialis* was detected in a woodland in Cornwall, England for the first time. The pathogen was found causing die-back and resinous cankers on branches and stems of mature western hemlock and Douglas-fir trees, symptoms that have never been observed on these species or radiata pine in New Zealand. Further surveys revealed outbreaks in Devon, Cumbria, Scotland and Wales. UK researchers are working with collaborators at Scion and in the United States to compare the populations and understand the epidemiology of *P. pluvialis* in these countries. This is critical for the UK as they seek to eradicate it.

Reporting RNC symptoms in 2022

Scion researchers are asking foresters to report observations of RNC in 2022 to support research on satellite detection and epidemiological modelling. Please send observations to stuart.fraser@scionresearch.com

Images: Typical appearance of red needle cast in radiata pine plantations. Source Scion

The Resilient Forests Programme

CONTRIBUTOR: STUART FRASER, SCION

Scion's Resilient Forests Programme aims to support New Zealand's forest industry to increase the productivity and profitability of radiata pine forestry, while balancing risk and uncertainty.

The programme is organised into three Research Areas (RAs) as follows:

Research Area 1: Managing future risks and uncertainty

RA1 aims to apply innovative approaches to increase the forestry sector's capability to manage risks and uncertainties. This includes research into portfolio diversification to mitigate risks and provide investment options, developing tools and frameworks to anticipate climate threats, and future-proofing forests through developing adaptive management tools.

Research Area 2: Whole-systems approach to enhancing productivity and wood quality

RA2 seeks to enhance the productivity and wood quality of New Zealand's radiata pine forests using a whole-systems approach. We are leveraging prior research and established field trials to investigate the influence of genetics, environment, and silviculture (GxExS) on productivity and wood quality, and to develop tools for forest managers.

Research Area 3: Enhancing the resilience of radiata pine forests to biotic impacts

In RA3 we are researching key pine needle diseases, allowing us to quantify and mitigate risk under climate change and develop new disease management tools that support investor confidence and social licence to operate. Research is focusing on five areas: growth impacts, disease epidemiology, disease control, autonomous forest health monitoring, and resilient silviculture.

Current activities in Research Area 3:

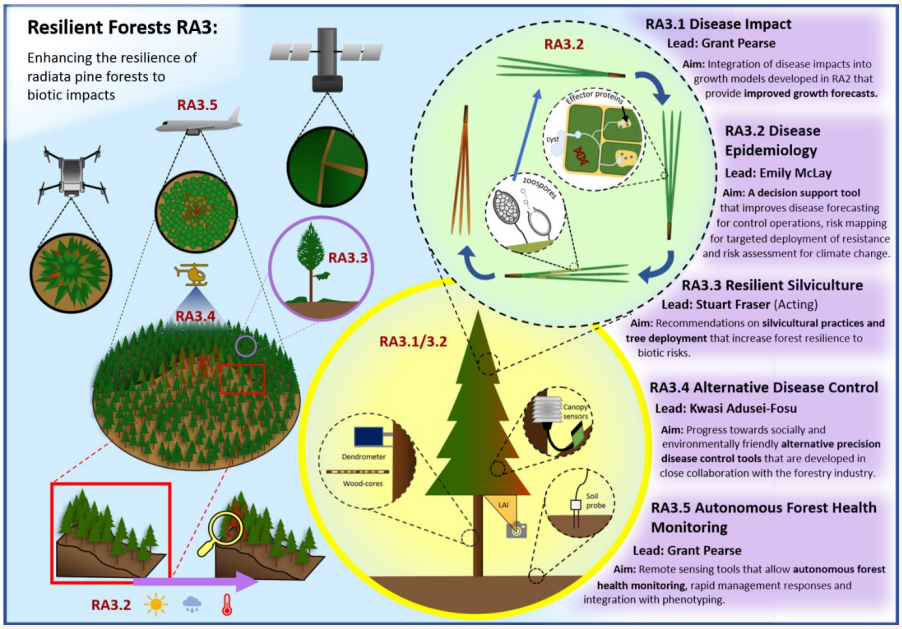
Disease impacts: If foresters are to manage red needle cast (RNC), they need to understand the impact the disease has on growth to support cost-benefit analysis. Scion is analysing wood core data from trees at a Central North Island forest with known history of RNC to quantify disease impacts on growth. This work will be expanded in September 2022, with coring from more trees with various histories of disease in North Island east coast forests. We also continue to monitor tree growth in a network of PSPs within copper fungicide trials and epidemiological monitoring sites.

Disease epidemiology: Scion pathologists continue to research the biology and epidemiology of the pathogens causing RNC to understand the drivers behind variation in disease expression; also to determine how important prior or current disease levels are in predicting future disease. This knowledge, together with remote sensing data from our forest monitoring framework, will be incorporated into an epidemiological model that will support disease forecasting. We have completed detailed studies on the impact of temperature on key life-cycle stages of the pathogen and have begun work on the impact of moisture. We also continue to monitor disease progression at a network of sites to calibrate our models.

Disease control: It is important that we develop control recommendations for RNC and continue to investigate alternative control options for Dothistroma needle blight. Scion and Manulife are working closely with an ongoing RNC copper trial series established at Kinleith Forest in 2019 to (i) investigate optimal spray timing (February vs April) and (ii) quantify disease impacts on growth. Scion has expanded these trials to North Island east coast forests in partnership with Juken NZ, with support from the Dothistroma Control Committee. Alternative control options are being tested on *Dothistroma septosporum* in the lab, including alternative chemical fungicides and metal salts.

Autonomous forest health monitoring: Scion is working in partnership with Indufor to develop a prototype forest monitoring framework using repeat-visit Sentinel satellite images to detect foliar diseases over large areas. This platform will allow foresters to monitor their forests and the impacts of disease at scale.

Resilient silviculture: A literature review is underway to identify silvicultural systems resilient to biosecurity incursions and climate change. The results of this will identify knowledge gaps for New Zealand radiata pine forestry and opportunities to address these with available datasets, assessments of already established field trials, and design of new trials.



The Resilient Forests Programme is led by Peter Clinton and has been co-funded since 2019 by Scion and the Forest Growers Levy Trust, with the support of the Forest Owners Association and the NZ Farm Forestry Association. It builds on work carried out under the Growing Confidence in Forestry's Future Programme, the Healthy Trees, Healthy Future Programme, and the Needle Disease Strategy.

Government Industry Agreement or GIA: What is it and how is it going?

CONTRIBUTOR: BRENDAN GOULD, FOA

Since starting in my role as the forest sector Biosecurity Manager I have often been asked about our Government Industry Agreement (GIA) and how it's going. Below is a brief overview.

What is GIA?

The Government Industry Agreement (GIA) is a formal partnership between government and primary industries which aims to improve New Zealand's biosecurity system. This recognises that we can achieve better biosecurity outcomes by working together. Biosecurity NZ is the lead government agency with responsibility for the wider biosecurity system and GIA provides primary industries with an ability to have a direct and influential say in how biosecurity risks are managed.

To join GIA, industry organisations need to sign up to the GIA Deed, which outlines the principles and commitments of the partnership. This provides the framework for signatories to engage with government, and each other, on agreed and cost-shared activities (i) to minimise the risks and impacts of a biosecurity incursion and (ii) prepare for, and manage, a response in the event of an incursion.

The Plantation Forestry Sector joined GIA in 2015 and is represented by the Forest Owners Association (FOA). MOUs between the FOA and the NZ Farm Forestry Association (FFA) and subsequently between the FOA and the NZ Forest Nursery Growers Association (FNGA) enable this.

> **"Biosecurity is just one of the many industry good programmes that are funded by the Commodities Levy"**

Funding for forest sector biosecurity initiatives and GIA activities is via the Commodities Levy (Harvested Wood Material) Order 2019 which is administered by the Forest Growers Levy Trust (FGLT). Biosecurity is just one of the many industry good programmes that are funded by the Commodities Levy.

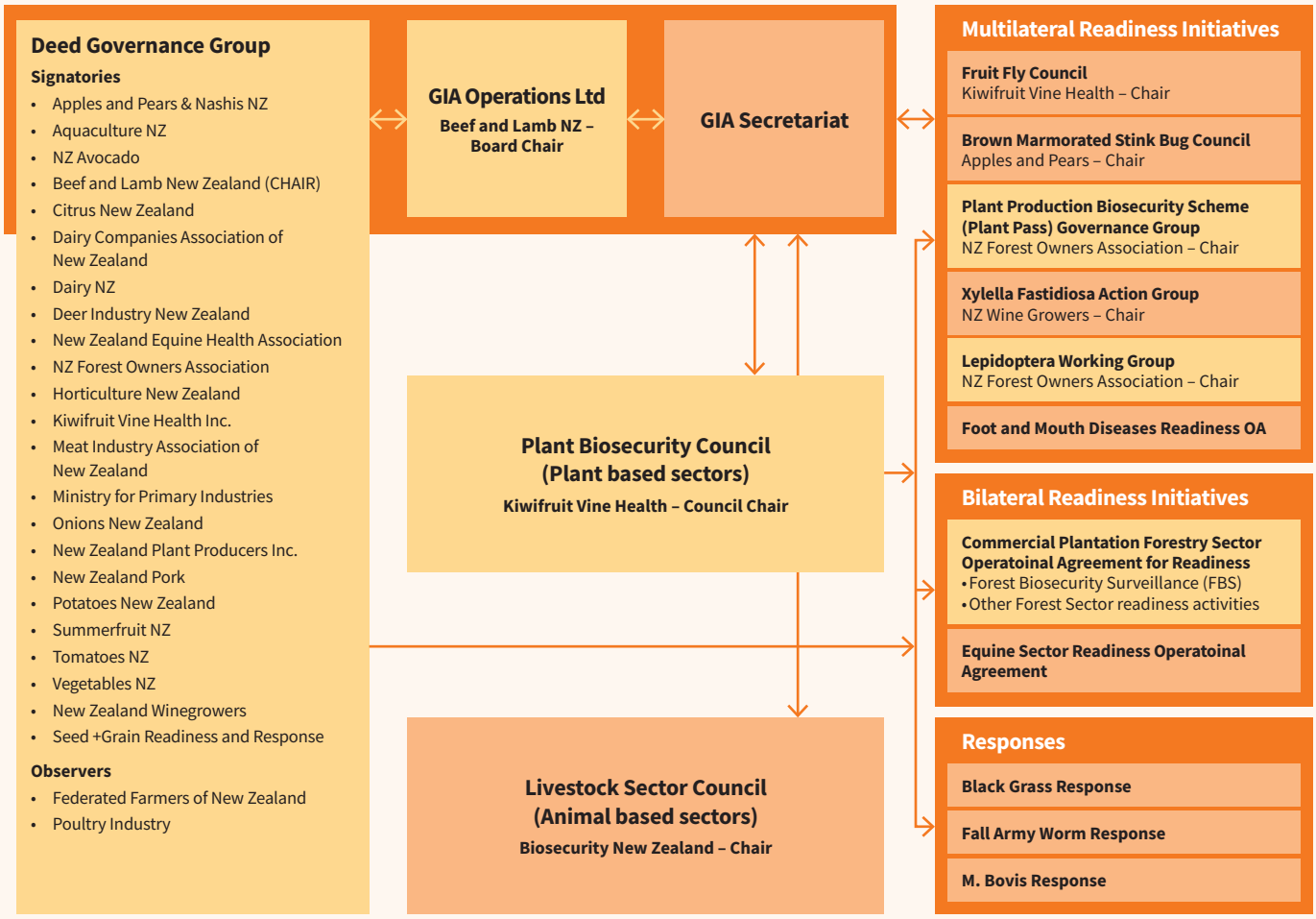
How does it work?

There are 23 signatories to the GIA deed including almost all primary industry sectors. The diagram demonstrates the various structures and working relationships of GIA.

The Deed Governance Group (DGG) has representation from all 23 signatories. It oversees the Deed and the processes and structures which give effect to GIA. Decision making has been by consensus which has posed challenges given the span of interests across the various signatories. However, it can also be seen as a safeguard against reactive changes. Recent changes have been implemented to better enable majority decision making to minimise the risk of one or two signatories blocking progress by the majority. Changes to the Deed itself still require unanimous agreement.

The GIA Secretariat supports and enables the operational delivery of GIA. It facilitates and administers all aspects of GIA from supporting its governance and operational delivery through to the joint work activities agreed and delivered by signatories. ***Cntd.***

The GIA in action. Areas involving the forestry sector are coloured yellow.



It was initially funded and housed within Biosecurity NZ but is now fully cost-shared by signatories and sits outside of government within a specifically established entity called **GIA Operations Limited (GOL)**. The FOA has a shareholding in GOL and is currently also a director.

There are two Sector councils (i) the **Plant Biosecurity Council** and (ii) the **Livestock Biosecurity Council.** These provide for more general sector alignment across GIA. While these councils have no mandated decision-making role, they provide effective platforms for cooperation, collaboration, communication, and information sharing across sectors that didn't exist before GIA. A range of beneficial cross-sector initiatives and perspectives have emerged. For instance, despite the forestry sector highlighting the importance of progressing a national Lepidoptera (moth) readiness programme with Biosecurity NZ for several years, little progress was made until this was raised with the Plant Council and several other sectors got on board. A programme of work is now underway (see Lepidoptera readiness, p2).

The actual business of delivering readiness and response activities is delivered under **Operational Agreements (OA)**. These are effectively contracts between the parties detailing the roles, responsibilities, agreed activities and cost shares. These can be **bilateral**, such as the **Commercial Plantation Forestry Sector Operational Agreement for Readiness** between the FOA and Biosecurity NZ, or **multilateral**, where there are multiple industry sectors with an interest in the activity, such as the Fruit Fly Readiness and Response Operational Agreement. All OAs have a governance group of OA partners that oversee the work delivered under the OA.

Response OAs operate in the same way as readiness OAs and can be pre-emptively developed and agreed before a pest or pathogen arrives in New Zealand where there is a willingness and ability (resourcing) to progress this. Often these become reactive once a new pest (including weeds) or pathogen is detected and there is agreement between the benefiting parties that a response is warranted.

"The greatest challenge around progressing an OA is agreeing the cost shares when there are multiple benefiting parties at the table"

The greatest challenge and delaying factor around progressing an OA is agreeing the cost shares when there are multiple benefiting parties at the table (and in some cases also not at the table!). There is a two-step process involved: (i) agreeing the Crown/industry cost share (i.e., the public vs the private benefit) and then (ii) the intra-industry cost share, including who the potential beneficiaries of any activities are. If necessary, the Crown will cover costs of an urgent response while cost shares are negotiated. All costs will still ultimately be apportioned at the eventually agreed cost shares. For responses, this is when the respective industry Response Levies will be activated.

How is it going?

The good – to date (luckily) we have not activated a response OA for a major forestry pest or pathogen. We have been involved in several investigations to determine if there is a biosecurity risk and if it was feasible to respond to a new pest or pathogen. Engagement and communication with Biosecurity NZ have improved significantly because of these events and our ongoing 'peacetime' engagement under GIA.

We have a readiness OA dating back to 2018 that covers the risk -based Forest Biosecurity Surveillance (FBS) programme, a key component of the wider forest Biosecurity Surveillance System (refer to the March 2022 Forest Biosecurity News for an overview of this system). The annual cost of the programme (a little over $700k) is shared 50:50 between the forest sector and the Crown. This is a significant co-investment in readiness and is probably the largest for a single readiness activity under GIA.

A key benefit of GIA is that it has been instrumental in enabling and strengthening cross-sector relationships, collaboration and information exchange. It has also enabled the progression of initiatives that benefit the forestry sector that we would not otherwise have been able to progress on our own – most notably Plant Pass, the national nursery biosecurity certification scheme, and the generic and cross-sector approach to Lepidoptera readiness.

As a participant in GIA, we also have input and therefore influence across the wider biosecurity system and do so alongside other primary industry groups, therefore further strengthening this influence. While GIA is focused on post-border activities, risk reduction is best achieved pre border and at the border, so engaging and influencing in these areas to reduce our risk exposure is critical.

The people that you work with make the world of difference to the progress possible when working with government. Fortunately, the forestry sector's GIA liaison within Biosecurity NZ is excellent and has supported and enabled a lot of progress over the last few years. Without GIA we would likely have to try to make connections across multiple parts of MPI, but now we can fast-track that process.

"The people that you work with make the world of difference to the progress possible when working with government. Fortunately, the forestry sector's GIA liaison within Biosecurity NZ is excellent"

The not so good – we have to compete with 21 other industry sectors for Biosecurity NZ's time and resources which can slow down progress of sector-specific work. GIA is relatively resource intensive and requires a large time commitment from industry biosecurity managers; however, I am certain the benefits for forestry to date have made this commitment well worthwhile.

While we have not yet activated any response OAs to any major forestry pests or pathogens, in 2016 the detection of the eucalyptus variegated beetle in Hawke's Bay resulted in a response which should have been delivered jointly under the GIA framework. Unfortunately, from the forest sector's perspective this response missed the mark in terms of what GIA was established to deliver, namely timely response, open communications and joint decision making. As a result, the forest sector was left with a low expectation of the benefits of responding under GIA. This was early days for Biosecurity NZ operating under the GIA framework and since then our relationship has improved markedly with lots of process improvements.

We have struggled to make progress on some forestry readiness initiatives that we have proposed, which has been frustrating. We have now agreed to work with Biosecurity NZ to develop a prioritised readiness work plan to help guide decisions around planning and resourcing from what is an already overcommitted and lean specialised resource pool within Biosecurity NZ. I am optimistic that this will help progress readiness work for the forestry sector.

Forest Biosecurity Committee Updates

The Forest Biosecurity Committee (FBC) has started to provide summary updates on key biosecurity topics covered at its quarterly meetings.

These will increase awareness of the FBC's work to improve plantation forest biosecurity. The updates can be found on the Forest Biosecurity Committee tab on the Forest Owners Association website – https://www.nzfoa.org.nz/committees/forest-biosecurity-committee.

Supporting Biosecurity Awareness in Schools

Awareness of biosecurity threats is crucial to improving our biosecurity system. You can never start too early! The Forest Biosecurity Committee recently supported biosecurity focused curriculum guidance for teachers in the Term Two 2022 edition of Starters & Strategies Magazine for Teachers (http://www.starters.co.nz/uploads/teachers-magazines/t2-2022-flip/).

This was included to coincide with Biosecurity Week 25-29 July. Funding was from the Forest Growers Levy Trust.

> **"Awareness of biosecurity threats is crucial to improving our biosecurity system. You can never start too early!"**

Other news/resources

Scion's Forest Health fact sheets

https://www.scionresearch.com/science/managing-forestry-risk-and-climate-change/protecting-our-forests-from-pests-and-diseases/Biosecurity-factsheets

Forest health news

https://www.scionresearch.com/services/science-publications/forest-health-news

Biosecurity New Zealand

Surveillance quarterly – https://www.mpi.govt.nz/dmsdocument/51988-Surveillance-Magazine-Vol-49-No-2-June-2022

Plant Health and Environment Laboratory – PHELosophies – June 2022 Newsletter – https://www.mpi.govt.nz/dmsdocument/51898-Issue-8-June-2022

The Border space – June 2022 newsletter

Vessel Biosecurity Quarterly – Vessel Biosecurity quarterly – July 2022 – Issue 3

Biosecurity Business pledge

https://www.thisisus.nz/biosecurity-business/biosecurity-business-pledge/

Previous editions of Forest Biosecurity News can be found here: https://www.nzfoa.org.nz/resources/file-libraries-resources/forest-health/pinenet

Brendan Gould
Biosecurity Manager
M: 027 364 1577
DDI: 04 595 4548

Email: brendan.gould@nzfoa.org.nz
www.nzfoa.org.nz

NEW ZEALAND FARM FORESTRY ASSOCIATION

supported by forestgrowers commodity levy