

Welcome to the Foundation News in the lonely cold!

The global pandemic continues and we are all wondering what the new normal might eventually be, including if (and when) we might develop a vaccine. And then how available and how effective it might be. As I draft this, it appears more spikes are occurring, to go with Melbourne's surge: the new norm is some time away. I think the vast majority of us in biosecurity know three things: viruses are really hard to control so these spikes/surges/hotspots will happen, therefore it will be about how quickly we can respond as governments and the community (and at the appropriate scale); this current norm may well be with us for a year or two, if not longer; let's be grateful about where we are compared to much of the world, even some other developed (?) nations!

And if I can find a silver lining, it has been the reliance on science to inform decision making: long may it continue and become part of the new norm!

Stay safe.

Call for proposals

The Board met recently and approved the next call for investment proposals.

Investment proposals must have a very specific and defined purpose, clear benefits to plant biosecurity in Australia, and be consistent with the Foundation's Vision and Mission (apbsf.org.au). Proposals are welcome from any organization or individual.

This 2020 funding round will focus on the following areas, although all proposals will be considered:

- environmental biosecurity (including with overlap with social and community biosecurity)
- Myrtle Rust, clearly aligned with priorities in the Myrtle Rust National Action Plan);
- social biosecurity, including indigenous engagement; and
- scholarships to attend conferences or training events, focused on Early Career Researchers and developing country links.

We welcome co-investment opportunities and collaborative initiatives, including with international linkages, related to the above.

Applications close on 27 August. Please contact the Foundation for further information or visit the [web-site](#) for the proposal application form.

Myrtle Rust National Action Plan

The Myrtle Rust National Action Plan has been finalised and is available on our web-site.

Myrtle Rust is a plant disease caused by the introduced fungal pathogen *Austropuccinia psidii* and it poses a serious and urgent threat to Australia's native biodiversity. Myrtle Rust affects plant species in the family Myrtaceae (paperbarks, tea-trees, eucalypts, and lillipillies), which

are key and often dominant species in most Australian ecosystems. To date it has proved capable of infecting 382 native species and this number is growing. Serious declines towards extinction are underway in some species, and broader ecological consequences are expected. Myrtle Rust is likely to have a significant impact on matters of national environmental significance protected under national environment law, including listed threatened species and ecological communities, wetlands of international importance, world heritage sites, and national heritage places.

We have written to the Minister for the Environment, the Honourable Sussan Ley, asking her to take responsibility for implementing the plan, and offering our support.

The Draft Action Plan, funded by the Plant Biosecurity CRC and the National Environmental Science Program, was released in mid-2018. Since then the Australian Plant Biosecurity Science Foundation has sought feedback on the plan and engagement with the relevant government agencies on its finalisation and, most importantly its implementation.

In the meantime, the Foundation will continue to build on the work of the PBCRC: so far we have made nine project investments addressing Myrtle Rust in Australia.

Blood disease in bananas – reducing risk to Australia

Professor Andre Drenth has just finished an important study into blood disease of bananas, collaborating with key scientists and partners in Indonesia. The disease originated in Indonesia some 100 years ago, but has recently spread widely amongst the archipelago and was recently reported in Malaysia. It's further spread is a major threat to South East Asian and world banana production.



The study provided evidence concerning the biology of infection. The research provided evidence that i) infection occurs through the male and female inflorescence, ii) the disease is highly tool transmissible and iii) that mother plants can transmit the disease to suckers. The studies revealed that both Cavendish and Kepok banana varieties are susceptible to blood disease. The scientific experiments conducted as part of this project provide evidence concerning the effectiveness of methods to prevent spread and infection. The experimental results were then used to develop a science based management plan. The management strategy included a series of recommendations such as tool sanitisation, de-belling with a forked stick, removal/destruction of diseased mats, bagging, and use of tissue culture plants.

The project eventuated from the Plant Biosecurity CRC's long involvement in Indonesia, working with colleagues on the Bilateral Plant Biosecurity Initiative. For the full report, visit the Project Page PBSF016.

Remote sensing and machine learning for improved biosecurity in forest and urban environments

The Foundation is delighted to co-invest with Foundation Member NSW DPI, the Greater Sydney Local Land Service and Arbor Carbon (from Foundation Member Murdoch University) in a new project to improve forest biosecurity using remote sensing and machine learning.

Several reviews have highlighted a need for improved biosecurity surveillance at first points-of-entry, commonly called high risk site surveillance (HRSS), such as at major ports and approved arrangement facilities. Government- and industry-funded surveillance programs utilize insect traps and host-tree surveillance. Currently in most jurisdictions, host trees are identified and mapped via ground surveillance (i.e. driving the streets), supplemented by examining GoogleMaps. This is very inefficient, and as such has only been conducted for a relatively small area of high-risk sites. During an emergency response to a forest pest detection, tree-host mapping is required for surveillance to delimit the spread and determine feasibility of eradication.

Dr Angus Carnegie from NSW DPI will lead the project. The team will assess the feasibility of remote sensing technologies and machine learning applications for detection and mapping of urban trees to assist in forest biosecurity surveillance. It will liaise with local councils to develop a collaborative agreement to improve urban tree biosecurity surveillance, linking in the DPI/Local Land Services Peri-Urban Biosecurity Program.

Tracking and forecasting of atmospheric pest and pathogen movements

Hazel Parry of the CSIRO, convened a workshop recently with a range of national and international experts, examining long distance dispersal of pests in the atmosphere. During the workshop, participants learned about novel research and networked with other researchers, gained insights on the integration of technologies and identified current applications for this research and possible collaborations. Workshop participants have since developed collaborative proposals to GRDC (Grains Research and Development Corporation) and for joint CAS (Chinese Academy of Sciences) -Qld or -CSIRO funding, along with the development of a draft 'review' or 'opinion' article to be pitched as a pre-submission inquiry to Trends in Ecology and Evolution next financial year: "Drought and the management of migratory insect pests". The results of the workshop will also be synthesised as planned into a methods publication during the next financial year: "A methodological framework for rapid assessment of the threat posed by long distance atmospheric movements of insect pests and pathogens".

The full report is available on the Projects page ([PBSF028](#)).

Fall Armyworm has arrived ...

A collaborative Grains Research and Development Corporation (GRDC) investment is underway to compile what is known about fall armyworm and assess the information gaps that need to be filled in order to support the Australian industry.

Species of lepidoptera from the *Spodoptera* genus are notorious for being a destructive group in agriculture. The fall armyworm, *Spodoptera frugiperda*, is native to the Americas but has invaded and spread throughout Africa, the Middle East and Asia in recent years. It arrived in northern Australia early in 2020. More information on the project can be found [here](#).

This work is being led by Dr Olivia Reynolds, Research Lead at **cesar** and Graham Centre for Agricultural Innovation Adjunct Associate Professor alongside project partners Plant Health Australia, CABI, and the Queensland Department of Agriculture & Fisheries. The Foundation is supporting the project as a member of the Liaison Group.

The team is conducting a RD&E gap analysis which will provide a detailed review of the establishment, spread, impact, diagnostics, surveillance and management RD&E options relating to fall armyworm for the Australian grains industry. Further, the project will also deliver an Extension Plan to industry.

We note also the recent FAW funding announcement by the Minister:

“The Australian Government has provided a grant of \$600,000 to Plant Health Australia (PHA) to coordinate research to address gaps in management of fall armyworm.

Funding will support a government and industry workshop to develop a national management plan.

It will also deliver a national research and development program and projects to better manage this significant biosecurity pest.” More [here](#).

Environmental Biosecurity Webinars – virtual Roundtables!

With COVID-19 restrictions likely in place in some form for some time, the Australia’s Chief Environmental Biosecurity Officer has moved to hold virtual Roundtables. The monthly webinars will run during the last week of each month using Microsoft Teams and be in place of Environmental Biosecurity Roundtables for 2020. Each webinar will feature three keynote speakers and explore a particular theme relating to environmental biosecurity.

You can find more information or register your interest [here](#).

Plant Health, Agriculture and Bioscience Conference in Amsterdam delayed to 2021

The Plant Health, Agriculture and Biosciences Conference, supported by CABI, a foundation Foundation Member, has been delayed until September 2021. The Foundation Chair still hopes to host the panel session ‘Securing international plant biosecurity collaborations’.



Watch the PHAB website for updates (<https://phab2020.com/>).

Memberships

The Foundation welcomes our new Member: the Indonesian Biosecurity Foundation. The IBF was established in 2018 with the support of the Plant Biosecurity CRC, and builds off several years of bilateral investments in the space.

Social Media

The Foundation is now on Twitter and LinkedIn, and will be posting news from the Foundation and sharing plant biosecurity happenings. Please connect with us!

Plant Health stewardship in cities: the time is right to explore opportunities.

Supported by the Foundation

Authors: Dr Jessica Lye, cesar, and Dr Helen McGregor, Redefining Agriculture

Project: 'Urban plant biosecurity: Using a foundational approach to understand emerging risks, support resilient cities and safeguard rural industry'

Australian cities are undergoing a high rate of growth. Stewardship of urban forests and coordination of community food growing enterprises are becoming widely accepted as tactics to pre-emptively boost resilience in the face of future challenges, such as increasing pollution, heatwaves, pressures on natural spaces, and food supply chain stability.

The potential for incentivising urban residents to mindfully steward improved plant health on their private land or community commons is high. Gardening, food-growing and land restoration and stewardship can lead to positive community level outcomes in terms of mental and physical health, and social cohesion.

Melbourne is the fastest growing city in Australia, and it is a place where local planning is actively accounting for the preservation and increase in urban green spaces, as well as community plant stewardship and production initiatives. The Plan Melbourne 2017-2050 strategy has a strong focus on creating the '20 minute' neighbourhood, where green spaces/natural spaces are central.

This paradigm shift is occurring at a time when there is growing pressure on global plant biosecurity systems, driven by increasing transmission pathway risk, finite government resources, and changing distributions of plant pests and disease.

While the challenges posed by urban environments in terms of potential for pest establishment and surveillance is frequently raised by those involved in plant biosecurity, exactly what a growing awareness and interest in urban plant stewardship and food production can mean for supporting the Australian plant biosecurity system has not been explored in any great detail.

Our current study, which is supported by the Australian Plant Biosecurity Science Foundation, is investigating this question. It is using Melbourne as a case study city that is experiencing a high rate of growth as well as fostering a strong urban greening direction. Throughout the study we are performing an assessment of urban land use, local planning directions, current and future risks, and networks that may support urban/peri-urban biosecurity activities.

The initial stage of the project has involved creation of a dataset that is supporting us in developing a current picture of plant stewardship and plant production networks across Melbourne and Greater Melbourne that may be engaged in supporting Australian plant biosecurity (through upskilling in the detection of suspect plant pests and implementation of good plant biosecurity practices).

This initial stage has involved identifying community gardens and local environmental stewardship groups across 160 suburbs (23 councils), and analysing local planning policies across this region. Preliminary results have revealed:

- There are environmental stewardship hotspots around the city that have sophisticated grass-roots information channels. We have identified 163 'place-based' groups in the metro Melbourne area that collectively provide environmental stewardship of approximately 19,197 Ha across the city.

- 1-17 community gardens and community growing spaces have been identified per council.
- A number of key suburbs and councils are highly represented in the community garden data, and this is also represented in and supported by council policy in these shires.
- 14/23 councils have specific community gardens or food growing policies or documentation.
- In the material interrogated to date, only 3 councils make direct reference to biosecurity in the documentation and policy that was applicable to food production or food security in the shire, with 2 of the 3 making minor reference in one document, and 1 making minor reference in 3 documents.
- Both community gardens and environmental groups have considerable networks, including through social media, and community events which could be engaged to support these communities through extension and education programs in plant stewardship and food production practices and policies.
- All but one of the community gardens included in this data set had a presence on social media, with Facebook being the most popular in 99% of cases.
- Approximately 36% of community gardens had an active Facebook community with over 500 followers. If it is estimated that the remaining 64% of gardens with a Facebook following had an average of approximately 150 followers, that offers a total community of up to 65,000 people engaged or within immediate reach of the gardens identified in this work.

Using this baseline data, mapping of crop production hotspots around Melbourne (which represent possible community-based plant health knowledge hubs) will be overlaid with future land use predictions and a representation of community group engagement reach to indicate where future biosecurity training and preparedness activities could be delivered for greatest impact.

As an outreach component of the project, **cesar** and Redefining Agriculture will host The Urban Green Series over August 2020, which will explore how city environments can become greener, cleaner and healthier places through mindful stewardship of the plant life already found in these environments.

Over August this series will investigate exotic pests that are currently impacting food crop production overseas, the 'priority' exotic pests that urban vegetable and fruit growers should look out for, how to monitor for pests, and how to report an exotic plant pest.

This series will also explore the role that urban community groups can play in strengthening our biosecurity system, and the plant biosecurity related risks and opportunities presented by growing food crops in the city.

What do we already know about urban resident interest levels?

Based on a 2019 survey undertaken by **cesar**, the likelihood of reporting a suspected exotic plant pest does not differ between rural and urban residents (459 respondents). Survey results indicated that even for city-based individuals spatially removed from commercial scale primary production, plant health is deemed as important with most respondents indicating that they would be 'likely' to report.