

### We are looking for new approaches that can drive improvements to biosecurity risk management





Australian Government

Department of Agriculture, Water and the Environment

#### Innovation, Data and Reporting Branch

Biosecurity Strategy and Reform Division

Department of Agriculture, Water and the Environment

### **Our Purpose**

Partnering and regulating to enhance Australia's agriculture, unique environment and heritage, and water resources

## **Biosecurity**





**Australian Government** 

Department of Agriculture, Water and the Environment

Biosecurity protects Australian livelihoods and is vital to strengthening and supporting our environment and economy, including tourism, trade and agriculture.

### **Our Challenges**



Changing global trends: goods and logistics chains



Increasing imports from a wider range of countries



More complex supply chains



Climate variability changing pest and disease distributions



Illegal activity circumventing biosecurity controls



Department of Agriculture, Water and the Environment



## Innovation Initiaties We are trying new things

**Biosecurity Innovation Program** 

**Business Improvement Pilots** 

Biosecurity Industry Innovation Challenge

## **Biosecurity Industry Innovation Challenge**

Partnered with Canberra Innovation Network to run the Biosecurity Industry Innovation Challenge in May 2020.

A fully virtual workshop where the department pitched four key biosecurity problems to over 100 participants.

23 proposals submitted through the department's biosecurity innovation hub - The Seed.

Three proposals received \$50,000 in funding to conduct a proof of concept project.



Audits



Treatment Verification



**Exotic Invasive Ants** 







### **Remote Auditing**



Improving assurance that entities are appropriately managing risk, without physically going on site.

Trialed the Zirkarta Unite platform which had been used by the Red Cross to coordinate geographically dispersed people in natural disasters.

Ability to geotag rich media when collecting as evidence of an audit.

Following the 12 week challenge pilot DAWE is currently investigating an enterprise audit management system.



Future proofing Australia's borders







### **Treatment Verification**



**Treatment Verification** 



Live data reporting during the fumigation process to assure the department the treatment has been completed successfully.

Trialed SensaData's Smart-r-Tag (prototype) to monitor Methyl Bromide, Oxygen, Carbon Dioxide and temperature readings throughout the fumigation process.

Significant challenges with connectivity and RFID strength, physical robustness, sensor placement capability.

The department is currently investigating another device from TriCal Australia.









### **Exotic Invasive Ants**



#### **Exotic Invasive Ants**



Research report into the use of pheromones to attract exotic invasive ants.

- Ability to target a particular ant species
- Reduced susceptibility to other pests (when compared to food)
- Longer in field applications when compared to food lures.

Development of new, 3D printable traps to provide a cost effective and reusable alternative to our current resource intensive trapping system.

Collaboration with NZMPI to share trap design.

NT Government continuing the research to assist with the Browsing Ant Eradication Program and the National Red Imported Fire Ant Eradication Program.









### **Tech for Assurance: Live Streaming Technology**

### Issues !

- Stretch on resources
- Ever increasing biosecurity risks
- Restrictions on movement due to COVID
- Delays in processing of imports on arrival

#### Opportunities 🌱

- Assessing risks remotely
- Improved processing times
- Strengthen third party industry arrangements

#### Pilots undertaken (Stage 1)

- Inspection of shipping containers with rural destinations
- Remote audits



**Benefits of Pilot** 



- Test connectivity and system capability in new locations (inc. remote areas)
- Biosecurity risk material identification in different classes of goods
- Shared responsibility
- Reusability and scalability

#### **Further testing (Stage 2)**

- Testing the capability and limitations of technology, particularly in remote locations
- Expanding to other types of inspections and commodities
- Testing exercises for training and WHS activities
- Developing standards/requirements for industry members using the technology for the future

### **Proposed Stage 2 Pilots**



#### **Activities in the Torres Strait**

**Pratique Clearance Simulation** - small vessel inspection Workplace Health and Safety Inspection - outer island office facility **Remote clearance of an abandoned car** - outdoor car inspection **Disease identification and notification** - testing verification activities for diseased pigs



**Break Bulk** - clearance of large wind turbines

**Country Action List** - detection of target species



High Volume Specialist Operator - inspection of unaccompanied personal effects

**Ranger Mine Rehabilitation** - remote inspection of site with specialists





# **Biosecurity Innovation Program**

Announced by the Australian Government in 2018 to invest in identifying, developing and implementing innovative technologies and approaches to improve biosecurity risk management.



### Our focus

Innovative technologies and approaches to assist with biosecurity screening of goods and passengers.

Emerging technologies and approaches with the potential to improve early detection which can enhance and maintain our export market access including drone surveillance, artificial intelligence, robotics, next generation sequencing and new biological controls.

Other initiatives to improve the effectiveness and efficiency of our national biosecurity system in a changing environment.





## **Creating apps for insect identification**

Deep Learning Al for Brown Marmorated Stink Bug (BMSB) Image Triage Project

Partnering with CSIRO.

Features 9 stink bug species, including BMSB, 3 other pest species and 5 native species.

Promising to be a low cost, automated, portable solution for the identification of BMSB by non-expert biosecurity officers.







## Partnering with PIC@PEQ



The Plant Innovation Center at the Post Entry Quarantine facility was established in 2017.



Located at Mickleham Victoria.



Performing operationally focused plant biosecurity research.





# **Adopting High-Throughput Sequencing**

Transformation of exotic plant disease testing at the PEQ by implementing Hight Throughput Sequencing (HTS) Project

Expanding diagnostic capability.

Delivering faster and more accurate results.

Potential to phase out over 100 inefficient, targeted molecular tests for plant viruses and viroids.





# Connect with us

Engage with stakeholders and bring crosspollination to life. See what we have been doing, share ideas and collaborate.





### The Seed - Our interactive innovation platform



Australian Government

Department of Agriculture, Water and the Environment

# Keep intouch

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