Biosecurity Innovation Program

Australian Government
Department of Agriculture, Water and the Environment

BIOSECURITY INNOVATION

October 2021

OUR RESEARCH & INNOVATION PRIORITIES

Who are we?

- We Invest in identifying, developing and implementing innovative technologies and approaches to improve biosecurity risk management.
- $5.5m of allocated funding each year for innovation projects.
- The Program overseen by the Research & Innovation Section has the experience, knowledge and capability to drive innovation initiatives forward and ensure they have the best chance of success.

What are we trying to achieve?

- Drive innovation through well targeted investment in new and emerging technologies.
- Ensure we are 'future ready' by funding projects through the Biosecurity Innovation Program and that foster collaboration with Australian and international innovators from the business sector, universities, startups and research entities.

How will we ensure it is working?

- We'll measure and report on the impact projects have had on enhancing our biosecurity system.
- Annual reporting and regular evaluations, feeding into decisions about future funding.
- Regular stakeholder feedback and input.

Where are we up to?

- Four years of funding investment in projects that are improving our biosecurity system.
- To date, the Program has funded **77** innovative projects.
- Expression of Interest round opened in October for the 2022-23 projects.
- Foundational systems developed (e.g, ideas collaboration, governance, evaluation).

Communication & collaboration

Improving communication and collaboration across the biosecurity system to enhance system participants' understanding, awareness and acceptance of biosecurity requirements.

What we've done so far:

- Building biosecurity awareness through better understanding of the behavioural drivers for people who threaten Australia's biosecurity.
- Virtual Innovation challenge with industry to identify biosecurity proof of concept solutions.

What's next:

- 2022-23 Ideas challenge
- Mixed-reality technology to invest in staff capabilities.

Risk analysis

Informing and enhancing our risk-based approach to biosecurity risk management.

What we've done so far:

- RingIR technology can quickly measure and identify the molecules in the atmosphere and identify the specific chemical present in that environment.
- AI to provide fast, accurate recognition of Brown Marmorated Stink Bugs via mobile phones.

What's next:

- Prepare for outbreaks by simulating the spread and control of African Swine Fever.
- Co-designing a container packing app with FTA to support risk-based decisions.

Surveillance, diagnostics & screening

Enhancing our surveillance, diagnostic and screening capability and capacity.

What we've done so far:

- Molecular screening using environmental DNA (eDNA) technology.
- High-throughput sequencing to expand our diagnostic capability and deliver faster, more accurate results for plant viruses.

What's next:

- Hades 5 robot for used cars and machinery inspection (partnering with New Zealand).
- Drone surveillance for feral pigs.
- DNA testing in cows to address anti microbial resistance.

Data & Intelligence

Improving data accessibility and enabling its use as business intelligence to inform biosecurity decision-making.

What we've done so far:

- Traveller data intelligence through analytical modelling and machine learning.
- Developed wildlife algorithms to manage risk and reduce illegal wildlife trade.

What's next:

- Rapid diagnostic capabilities to prepare and respond to emerging threats.
- Develop a risk assessment model for avian influenza.
- Machine learning for biofouling risk.

Automation

Enhancing our biosecurity processes through the use of automation to improve the effectiveness and efficiency of biosecurity activities.

What we've done so far:

- Implemented human health reporting digitisation and mobile passport reader projects in Australian airports.
- GoPros for peer to peer learning.
- Container sensors for detecting Brown Marmorated Stink Bug.

What's next:

- Automating biofouling management plans.
- Automation algorithms to detect seeds in mail items.