Plant Health AUSTRALIA

# WORKSHOP FINAL REPORT

## ANNUAL SURVEILLANCE WORKSHOP 2019

These workshops were supported by funding provided by the Australian Government

Australian Government
Department of Agriculture and Water Resources

Improving national biosecurity outcomes through partnerships

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Plant Health Australia (PHA) is the national coordinator of the government-industry partnership for plant biosecurity in Australia. As a not-for-profit company, PHA services the needs of Members and independently advocates on behalf of the national plant biosecurity system. PHA's efforts help minimise plant pest impacts, enhance Australia's plant health status, assist trade, safeguard the livelihood of producers, support the sustainability and profitability of plant industries and the communities that rely upon them, and preserve environmental health and amenity.


Australian Government
Department of Agriculture and Water Resources

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# Acronyms

| ACRONYMN | DESCRIPTION |
|---|---|
| AMIA | Australian Mango Industry Association |
| ASW | Annual Surveillance Workshop |
| ABGC | Australian Banana Growers Council |
| CEBRA | Centre of Excellence for Biosecurity Risk Analysis |
| DAWR | Department of Agriculture and Water Resources |
| DPIPWE | Department of Primary Industries, Parks, Water and Environment |
| DPIRD | Department of Primary Industries and Regional Development |
| GRDC | Grains Research and Development Corporation |
| ISPM | International Standards for Phytosanitary Measures |
| NSWDPI | New South Wales Department of Primary Industries |
| NGIA | Nursery and Garden Industry Australia |
| NIWG | Network Implementation Working Group |
| NMDS | National Minimum Datasets Specifications |
| NBPSP | National Bee Pest Surveillance Program |
| NPPP | National Priority Plant Pests |
| NSP | National Surveillance Protocols |
| PIRSA | Primary Industries and Regions South Australia |
| PSNAP | Plant Surveillance Network Asia Pacific |
| QDAF | Queensland Department of Agriculture and Fisheries |
| SNIWG | Surveillance Network Implementation Working Group |
| SNPHS | Subcommittee on National Plant Health Surveillance |

# ASW2019 Key outcomes

Through the series of presentations, ASW2019 workshop attendees gained knowledge and discussed:

- Pests detected at the border during the last two-year period.
- Research underway to determine how general surveillance could be used to provide information on pest status.
- The national bee pest surveillance program (NBPSP) as an example of a successful industry-government surveillance partnership.
- Tools being used to capture surveillance information in the field by mango industry development officers.
- Communication mechanisms in use in New Zealand across a broad range of stakeholders to improve biosecurity of key pest threats.
- Development of industry-government partnerships in New Zealand to undertake surveillance and capture data.
- The numerous, significant pathways for pest movement into and within northern Australia and how their management could be improved.

Workshopping sessions on the National Surveillance Capability Framework, communications mechanisms for biosecurity risk pathways in Northern Australia, and improving national data capture capabilities, delivered the following findings:

- To improve collection and capture of surveillance data, efforts must be made to identify and integrate surveillance into existing systems being used by both industry and government.
- To better support industry-led surveillance initiatives, identification of the incentives and disincentives for undertaking surveillance and sharing information into a national system is needed.
- Diagnostic support is critical for an effective surveillance system.
- While new technologies in data capture, surveillance and diagnostics have the potential to make significant improvements in efficiency of the surveillance system, they must meet the needs of stakeholders and be 'fit for purpose' depending on surveillance objectives.
- A review of the National Minimum Dataset Specifications is needed in light of revisions to the International Standard for Phytosanitary Measures Number 6 – Surveillance.
- Better communication is needed to improve understanding of terminology used within the surveillance network.
- Future areas of activity for the Plant Surveillance Network Australasia Pacific (PSNAP) and areas for content development of the new PSNAP website included emerging technologies, ways to improve collaboration, and identifying opportunities for further professional development.

# ASW2019 Key recommendations

1. Development of the National Surveillance Capability Framework needs to consider the following areas:
    a. Identification and integration of surveillance in government and crop monitoring activities in industry to improve efficiencies and maximise opportunities for cooperation and collaboration.
    b. Diagnostic support is critical to ongoing national surveillance capability.
    c. Identification of clear incentives, and an absence of disincentives, will be required for parties to be involved in surveillance initiatives.
    d. Development of basic training in surveillance should consider the audience and the purpose of the training.
2. Development of communication activities and materials to raise awareness of the importance of pest pathways should be undertaken. This communication should:
    a. Identify and prioritise the audiences to whom messages should be communicated.
    b. Identify the most appropriate communication channels.

3. Development of a glossary of surveillance terminology should be undertaken. *A glossary of terms will be developed/updated as part of the review of the National Plant Biosecurity Surveillance Strategy.*
4. The National Minimum Dataset Specifications (NMDS) should be reviewed and updated, followed by endorsement, implementation and communication of these standards. *Since the completion of the workshop the Surveillance Design and Analysis Working Group have been tasked with reviewing the NMDS by the Subcommittee for National Plant Health Surveillance.*
5. Implement a national system for aggregation of surveillance data for industry and government:
    a. AUSPest*Check* was identified as a suitable system, however, must be supported by a governance group to identify and prioritise issues and improvements to support national surveillance.
    b. Taxaas should be connected to national systems to support consistency of data collection.
6. The Surveillance Network Implementation Group (SNIWG) should continue to develop PSNAP to facilitate better collaboration between stakeholders and identify and progress opportunities for professional development.

# Background and introduction

Annual Surveillance Workshops (ASW) and Annual Diagnostic Workshops (ADW) have become an important mechanism to assist identify and build capacity and capability for plant biosecurity surveillance and progress implementation of its core role to coordinate a network of surveillance practitioners.

ASW2019, held on 13th and 14th March 2019 in Brisbane, continued this work by providing an opportunity for consultation on key aspects of the National Capability Framework, as well as the sharing of knowledge on surveillance initiatives underway in Australia and New Zealand.

ADW2019 was held in Sydney on 6-7th March 2019 and continued professional development for the National Plant Biosecurity Diagnostic Network.

These annual workshops have been coordinated by PHA, the Chairs of the Surveillance Network Implementation Working Group (SNIWG) and diagnostic Network Implementation Working Group (NIWG) and representatives of DAWR. To ensure broader engagement across government and state jurisdictions, this grant provided support to assist travel costs for non-Australian government attendees for both SNIWG and NIWG through payment for flights and one night's accommodation.

Funding for this project was provided through the Australian Government.

# ASW2019 Workshop participation

The ASW19 was held over two days, with 61 people in attendance from a range of organisations including the Australian government, state and territory departments, industry, research and development organisations, and the New Zealand Ministry of Primary Industries and AsureQuality (Figure 1; Appendix 1). An agenda for the meeting is included as Appendix 2.

*Figure 1 ASW19 attendees*

*Figure 2 ASW19 attendees during presentation from Rory MacLellan from New Zealand MPI.*

# ASW 2019 Workshop sessions

## Updates from governments and industry

Presentations were given by government departments and industry organisations on the current status of surveillance activities being undertaken. Significant points from these updates included:

- Exports are a key reason for surveillance and significant levels of surveillance are being undertaken by industry and government to support export protocols, however little is nationally aggregated or summarised.
- Surveillance and crop monitoring for established pests and their management underpins the expertise and activities that could be used for surveillance for exotic pests.
- A significant challenge for industry surveillance is the speed at which surveillance programs can adapt and respond to emerging pest threats.
- MyPestGuide reporter is an important tool for undertaking general surveillance.
- Providing small incentives has been found to be an effective way to engage people to undertake surveillance for specific pests. Examples included seedlings and or yellow sticky traps.
- Industry groups indicated that while they want biosecurity to become part of the everyday farm practices, achieving this objective isn't without its challenges.
- Enhancing electronic capture of data in order to build a comprehensive data set and add to the national surveillance picture is seen as an important step for a number of industries.

## Improving surveillance systems – Part 1 & 2

Presentations were given that provided an overview of a range of activities being undertaken to improve surveillance systems in Australia and New Zealand. These presentations will be made available to members through the PSNAP website, but the key points are as follows:

- **Previous 12 months of the Agricultural Competitiveness White Paper** (Susie Collins) – Maximum return on investment (in dollar terms) is through pre-border surveillance but capture and retention of data is critical.
- **Emerging pest threats at the border** (Bill Crowe) – There were many and varied pests picked up at the border during the two-year period from which data were presented. High interception rates don't necessarily equal incursions however – it's possible that we can have no previous interceptions and still have an incursion e.g. red imported fire ant.
- **General surveillance** (Mark Stanaway) – It may be unreasonable and unrealistic to put the impost of meeting the National Minimum Dataset Specifications (NMDS) on industry and meeting NMDS will not be possible for a range of general surveillance activities. An Agricultural Competitiveness White Paper project through CSIRO is looking at general surveillance to identify the many ways of describing systems without needing to record data points.
- **National bee pest surveillance program** (Jenny Shanks) – The National bee pest surveillance program (NBPSP) is an example of a successful industry-government surveillance partnership but there are many challenges with this model.
- **Collecting mango industry surveillance data** (Samantha Frolov) – Mango industry development officers has been testing a system called AgKonect to capture surveillance information in an electronic form in the field. This system includes the ability to track the officer's movement through the field and the trees at which they stop in the specified block. The application costs $480/farm and can be loaded on up to 5 devices.
- **Modelling for establishment and spread** (James Maino) – A model has been developed and assessed for vegetable leaf miner which is underpinned by surveillance, economic modelling, weed host surveys, statistics on crops in various areas and climate data. It was noted that spread risk is closely related to establishment risk.

- **Biosecurity in New Zealand** (Rory MacLellan)
  - MPI uses independent contractors for field surveillance in which there is a requirement for the contractor to implement at least one innovation per contract period.
  - Usually there are about 100 calls per month to the NZ plant pest hotline which result in about 50 investigations. Most of these investigations result from reports by government or industry callers, few calls from members of the public are ultimately investigated in the field.
  - Investments are being made in the use of machine learning for pest ID using submissions through an app.
  - The use of stickers on the outside of containers, cartons and trucks is being trialled to remind freight forwarders, couriers, etc to look for pests and ensure a quick identification is achieved.
  - One of the key issues with Brown Marmorated Stink Bug (BMSB) infestation has been that cargo is loaded on ships which is not destined for NZ and has therefore not been treated appropriately.
- **AsureQuality, New Zealand** (Kerry King)
  - As a contractor to the Ministry of Primary Industries (MPI) AsureQuality have a 'no secrets' policy with MPI to ensure that all issues are resolved quickly.
  - Backyard fruit fly traps are checked every 14 (+/-1) days by AsureQuality staff with records made in a tablet/phone-based app.
  - A system called ESRI collector is being used. It is a customizable off the shelf product from the company who produce ArcGIS.
- **iMapPESTS** (Rohan Kimber) – iMapPESTS is a consortium proof of concept project funded by the seven plant-based research and development corporations to produce a set of trailers fitted with equipment to capture airborne pests together with environmental data. The collected samples will processed at SARDI and AgVic using QPCR and NextGen sequencing respectively to identify the pests. The outputs of this will then be communicated to growers by AUSVEG.
- **RapidAIM** (Nancy Schellhorn) – RapidAIM is a subscription service, with a choice of three GPS trackable physical trap types and five sensor types depending on the subscription. An Agricultural Competitiveness White Paper project has allowed deployment to 5 regions and 50 growers for testing. The RapidAIM product will result in a 35% saving in costs compared to having to manually check traps.
- **Update on Agricultural Competitiveness White Paper (ACWP) projects** (Annette Healy) – The aims of this funding have been to increase access to premium export markets through enhanced surveillance by targeting the most critical risks and to establish collaborative relationships to improve national surveillance objectives. This has been achieved through a wide range of projects including development of surveillance strategies for different industries, assessment of general surveillance and establishing and testing systems for data capture.
- **National Forest Biosecurity program** (Paco Tovar) – This program as established following development of the National Forest Biosecurity Surveillance Strategy and the recognises the that forests are comprised of plantation timber, managed and unmanaged native forests, and urban forests. This work is currently seeking to establish a long-term, sustainable National Forest Biosecurity Program made of multiple stakeholders.
- **Pathways into and within Northern Australia** (James Walker) – This presentation described outcomes of a recent report which outlines that there are numerous, significant domestic pathways for pest movement and their management could be improved; there is a pattern of southern to northern domestic movement of pests; urban/peri-urban pathways are significant; there are a significant number of *Hemipterous* insect pests which are moving into the north of Australia; and there is limited understanding of biosecurity risks and their pathways which requires engagement and education.

## National Surveillance Capability Framework (workshop)

After discussion of the breadth of potential topics raised following ASW2018, the agreed focus for ASW19 was the assessment and progression of the National Surveillance Capability Framework ('the Framework') developed by DAWR. The Framework has a series of high-level capability requirements including People, Technology systems/tools, Standards/processes/arrangements, Information/instructional materials, Infrastructure, and Processes.

Within ASW19 the following questions were workshopped to consider:

- Why are we trying to build capacity?
- What skills are needed?
- What training or development is required to deliver the capability &/or improve skills?
- Who needs to have capacity or capability?
- Who are the experts?
- What do we already have?
- What tools, information or systems are needed?

Attendees then assisted in prioritising the following questions associated with delivering the National Capability Framework:

- How could/should we build and grow our surveillance capability?
- What are the top 3 skills where capability is needed?
- How could we transfer knowledge from those who are retiring to those who are emerging?

A detailed description of responses to assessment of the skills needed and mechanisms to support development of these skills is provided in Appendices 2 and 3.

### Summary of recommendations on National Surveillance Capability Framework

In order to apply and deliver the National Surveillance Capability Framework, identification of the purpose of surveillance activities is required in order to tailor the development of skills. In general, the major recommendations for areas in which development of capacity and capability are needed were:

- In-field expertise – people (skills on where/how to sample/triage of samples)
- Up and downstream communication and systems – mechanisms to improve information flow and sharing of knowledge to maximise efficiency and effectiveness of surveillance while minimising potential trade issues or commercial in confidence concerns
- Surveillance procedures
- Basic skills in sampling, labelling, GPS use, data entry
- Data analysis, management and interpretation
- Survey design
- Risk analysis and pathway knowledge
- Spatial data collection and handling
- Coordination – government/industry collaboration
- Identification of plant hosts and botanical expertise
- Policy development
- Knowledge of farming systems and operations

Major recommendations on how to develop capacity and capability were:

- Invest in tertiary education curriculum
- Invest in innovative technologies to maximise impact of dwindling expertise
- Have programs that support 'understudies' or mentoring
- Develop manuals with trouble shooting instructions
- Hold regular training – workshops + residentials together, including seeing pests in the field
- Provide online resources + toolbox
- Swap/second staff during incursions/responses

- Run scenario-based workshops
- Undertake retrospective analysis of response efforts and survey programs
- Develop modules on PSNAP website for different audiences – government, industry, commercial, etc
- Continue to develop content in TOCAL training
- Develop surveillance guides/instructions/protocols and a glossary of surveillance terms
- Review how surveillance/biosecurity practitioners gained the skills and experience to get to where they are now – could these experiences be applied down the line?
- Develop pest identification skills networks and support the surveillance network
- Establish community champions
- Make collected and collated data meaningful
- Learn from Torres Strait – NAQS program builds skills in communities – FrontLine
- Encourage dialogue between government/industry and education sectors to build surveillance awareness and knowledge with a view to embed surveillance in education/build surveillance programs

## Identification of communication mechanisms and tools to improve awareness on pathways

Workshop participants were asked to define internal and external audiences and corresponding channels for communication. For the purposes of this exercise "internal" describes surveillance practitioners and "external" describes the rest of the community.

There is a need for more analysis and communication about pest interceptions at the border, and establishment of timelines into which these communications activities will fit. When planning communication on pathways, it needs to be a two-way engagement for knowledge sharing to gain an understanding of benefits for stakeholders and relaying why this is important. If these issues are not addressed first then communication with the identified audiences, by any channel, will be less effective. A number of audiences were identified where communication about biosecurity risk pathways in Northern Australia should be directed. A wide range of channels through which communications with these and other internal and external audiences could occur were also identified

Some groups undertaking the workshopping activities raised higher level issues which they thought needed to be answered before we can get into the detail of the audiences and channels. These included the need for more analysis and communication about pest interceptions at the border, and establishment of timelines for communications activities. The point was made that when planning communication, it needs to be 2-way knowledge sharing to gain a good understanding of 'what's in it' for the audience and why the topic is important. If these issues are not addressed first then communication with the identified audiences, by any channel, will be less effective.

The next step in this process is to determine the timeline in which the communication activities outlined below should be undertaken based on the priority of that audiences. From the prioritised list of audiences, choices can be made from the list of suggested channels based on those which are more appropriate and realistic.

### Audiences

The workshop participants identified that awareness communication should be targeted towards stakeholders in peri-urban areas including councils, community gardens and fresh markets in addition to specific interest groups and the broader community. Transporters of fruit and vegetables, non-biological freight, and people, and grey nomads were also identified as specific target audiences. The biosecurity industry including growers and other industry specific people, those within the three levels of government departments, and natural resource managers were also considered as requiring targeted communication.

## Communication channels

The communication channels, identified by the workshop participants, through which audiences could be engaged, following workshopping of clearer messages, included:

- Internal
    - Establish and maintain PSNAP to link to target groups with specific messages
    - Stakeholder specific stories – both positive and negative
    - *Surveillance* magazine/journal
    - "First detectors"
    - Increased data exchange between state/territory and commonwealth organisations including timely sharing of interception/information/survey results
    - Staff exchange between offices/organisations, or hotdesking within an office/organisation
    - Targeted and strategic communication including de-communication (reducing unnecessary communication)
    - Intranet and/or internet
    - Workshop across successful elements – review what's existing
    - Collaboration/communication between industries and programs
    - Normalise the National Biosecurity Communications Network (NBCN)
    - eXtensionAUS pilot project community of practice for peri-urban biosecurity
    - Cropsafe updates and alerts
    - Industry specific collaboration with government departments
- External
    - Social media (Facebook, Twitter, Instagram etc)
    - Through input into major infrastructure developments and planning processes
    - RACQ
    - Tourist information centres
    - Travel brochures
    - School curricula
    - Gardening shows and magazines
    - Call to action labels – e.g. stickers on trucks as has been done in NZ
    - Local radio
    - Notice boards – hard copy or Facebook → keep messages clever and fun to encourage sharing
    - Appeal to values of different stakeholders – e.g. risk to plants/animals they care about.
    - Specific indigenous groups through culturally appropriate channels – e.g. indigenous groups – to improve understanding in a more targeted way
    - Through community groups that care about the environment
    - Through relatable 'champions'
    - Professional networks (LinkedIn)
    - Radio shows/segments
    - Community group presentations and field days
    - Interstate quarantine website
    - Kids in-flight info/activity pack
    - Regulation of online market places (eBay, Amazon) and/or alerts about pests when making online purchases
    - TV shows with targeted messages (Border Patrol)
    - Podcasts
    - Gardening Australia
    - Citizen science

## Improving national capability for data capture

The final session of the workshop focused on improving the national capacity for data capture will provide tangible outcomes on the effectiveness of the surveillance system. Data capture will also allow ongoing monitoring of surveillance activities to assist identify gaps in surveillance activities nationally, and support a system of continual improvement.

Workshop participants were asked to categorise their ideas according to the timeframe in which they could realistically be delivered. The full set of ideas are provided in Appendix 4.

### Recommendations on national capability for data capture

- In 6 months, a glossary of surveillance terms was seen as a critical need in the surveillance system as this will assist both enable consistency in data collection and capture as well as in the promotion of communication on surveillance. *A glossary of terms will be developed/updated as part of the review of the National Plant Biosecurity Surveillance Strategy.*
- Within 6-12 months, review and update of the National Minimum Dataset Specifications (NMDS) should be undertaken as a result of both the recent revision of ISPM 6 (Surveillance) and to assist with national consistency in data capture, analysis and reporting. Review of the NMDS will require endorsement, implementation and communication of the revised standards. *Since the completion of the workshop the Surveillance Design and Analysis Working Group have been tasked with reviewing the NMDS by the Subcommittee for National Plant Health Surveillance.*
- In 6-12 months a single national data repository needs to be agreed and resourced with appropriate governance to prioritise modifications. This system then needs to be implemented with industry and government data collated. 0
- In 12-36 months Taxaas should be delivered and connected to other systems.

Other activities required to underpin national data capture include improved cooperation between government and industry, collation and streamlining of a range of datasets, and development of consistent guidelines for undertaking surveillance. Cooperation, however, will rely upon clear incentives, and an absence of disincentives, for parties to be involved.

In the area of data capture, new technology will make improvements in efficiency, but deployment will need to be well considered in order that the needs of stakeholder's and the system are met.

# Feedback on and evaluation of ASW19

A total of 24 responses were received from a combination of a SurveyMonkey poll and direct feedback by email. From the responses received, it appeared that the overall feedback on ASW19 was positive, with the majority of respondents feeling that it provided opportunities for professional development and networking with peers. While the workshopping session on the National Capability Framework was only considered to be of moderate overall value to attendees, it still provided an opportunity for these themes to be tested. Workshop presentations from invited speakers were extremely well received, with all respondents indicating they were of high value. In particular, the presentation by Bill Crowe was identified as very valuable. Field trips stood out as something participants would like to see more of in the future. Detailed responses are provided in Appendix 5.

# Appendix 1 – Participant list ASW2019

| NAME | ORGANISATION |
|---|---|
| Andréa Magiafoglou | Cherry Growers Australia |
| Andrew Tomkins | DAWR |
| Angus Sly | DAWR |
| Annette Healy | DAWR |
| Bernadette Wittwer | DAWR |
| Bill Crowe | DAWR |
| Bonny Vogelzang | PIRSA |
| Brendan Rodoni | AgVic |
| Bruce Birtwell | QDAF |
| Callum Fletcher | AUSVEG |
| Christine Horlock | QDAF |
| Craig Marston | DAWR |
| Darren Peck | DAWR |
| Darryl Hardie | DPIRD |
| David Gale | PHA |
| Dean Brookes | UQ |
| Dinesh Kafle | QDAF |
| Geoff Kent | QDAF |
| Geoff Pegg | QDAF |
| James Maino | CESAR |
| James Walker | PHA |
| Jenny Shanks | PHA |
| Jess Holliday | Hort Innovation |
| Jessy Logan | QDAF |
| John McDonald* | NGIA |
| Kathy Gott | NSW DPI |
| Ken Young | GRDC |
| Kerry King | AsureQuality |
| Kevin Clayton-Greene | (Consultant) |
| Lana Russell | AgVic |
| Linda Baker | DAWR |
| Louise Rossiter | NSW DPI |
| Luke Watson | DAWR |
| Mark Stanaway | DAWR |
| Martin Mebalds | AgVic |
| Michelle McKinlay** | ABGC |
| Murray Sharman | QDAF |
| Nancy Schellhorn | RapidAIM |
| Nichole Hammond | DPIRD |
| Nick Housego | DAWR |
| Paco Tovar | PHA |
| Penny Measham | Hort Innovation |
| Ranjith Subasinghe | DAWR |
| Rob Stephens | QDAF |
| Robert Gray** | AMIA |
| Rohan Kimber | SARDI |
| Rory MacLellan | MPI |
| Rosalie Banks | QDAF |

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|---|---|
| Salvo Vitelli | QDAF |
| Samantha Frolov* | AMIA |
| Sharyn Taylor | PHA |
| Simon Barry | CSIRO |
| Simone Hiemoana | CSIRO |
| Stephen Pratt | DAWR |
| Susie Collins | DAWR |
| Tara Konarzewski | DAWR |
| Tony Arthur | DAWR |
| Trevor Dunmall | PHA |
| Veronica Hayes | DPIPWE |
| Vinni Pather | MPI |
| Warwick Roe | QDAF |

** denotes only attended 13th March 2019.*

*** denotes only attended 14th March 2019.*

# Appendix 2 – Applying the National Surveillance Capability Framework

## Why are we trying to build capacity?

- For industry
  - Protecting market access
  - Increasing cost efficiency
  - To have confidence in pest status – eradication/management
  - Improving production
- For government
  - Deliver surveillance programs/outcomes efficiently to support industry and environment/community groups
  - Spread the load across individuals and organisations
  - Counter loss of capability
  - Increase efficiency and effectiveness by being able to identify and report all activities from industry and government
  - Surge capacity in the event of a pest incursion or outbreak
- For the environment and community
  - Natural resource protection
  - Public amenities
  - Educate lay people and gather their interest and knowledge – create a broad-based surveillance network
  - Community assets
- For the nation
  - Protecting Australia's assets
  - Consistency/confidence in surveillance activities
  - A better biosecurity system – mitigate biosecurity risk
  - To understand the broader objectives – e.g. market access, general surveillance for crop protection
  - To standardize data collection so that it's useful, quality data

## What skills are needed?

- Generic
  - OH&S
  - Communication and engagement skills
  - GPS use,
  - Data entry,
  - Attention to detail
  - Pragmatism
  - Basic literacy and numeracy
  - Ability to notice something different
  - Passion for biosecurity -curiosity to learn and develop
  - Ability to put knowledge into practice
- Specific
  - Survey design – pathology x biology x detection interaction
  - Survey planning – basic understanding of stats and analysis
  - Use of appropriate technology
  - Risk pathway analysis
  - Legislative requirements
  - Data collection,
  - Sampling for different organisms or symptoms in different hosts,
  - On-farm biosecurity

- Logistics including the ability to manage interactions across the system – diagnostics, field staff, managers
- Understanding of plant pests and diseases
- Surveillance protocol best practice
- Knowledge of how to handle specimens for use by diagnosticians
- Understanding of the industry
- Integration of planning, management, delivery, analysis, reporting, comms/engagement, pathway analysis, and technical (field) skills

### What training or development is required to apply the National Capability Framework?

Workshop participants suggested that the training or development which is required to apply the National Capability Framework should focus on in-field activities – practical sampling, symptom recognition, data entry and reporting, phytosanitary procedures, hygiene, Workplace Health & Safety, biosecurity obligations (under legislation), and awareness of procedures and ability to use tools such as sticky traps. There should have multiple levels of entry and accreditation depending on the required specificity of training, delivered by a range of organisations. Ultimately everyone involved with surveillance should have a base level of understanding of activities, but they will be undertaking surveillance with different knowledge and for specific purposes.

### Who needs to have capacity or capability?

Biosecurity surveillance will be different for various types and purposes of surveillance, but an overarching objective would be for surveillance to become part of 'business as usual' across industry, government and research staff who are working with in plant production, maintenance or biosecurity. This includes surveillance officers, team leaders, coordinators, managers, agronomists/crops scouts, industry liaison officers, government operations staff, peak industry bodies, exporters, marketers, market access negotiators, crop monitors, and suppliers to industry. Key engaged community groups such as garden clubs, those participating in community gardens and plant societies should also have a basic understanding of biosecurity surveillance.

### Who are the experts?

It was determined by the workshop participants that there are different experts in different contexts and for different training purposes. The list may include, however, government biosecurity staff, industry biosecurity officers, diagnosticians, agronomists, field technicians, technology providers, Research and Development providers, biometricians, communicators, crop monitors, and frontline operations staff.

### What do we already have?

It was agreed while we have a range of support material (protocols, surveillance designs, factsheets, guiding principles for surveillance, on farm biosecurity manuals, Cert III and IV at TOCAL, industry knowledge, systems, plans, people, emergency response plans, farm biosecurity plans, technical expertise, and diagnostic protocols), there is a need to collate and gather these materials to allow an audit and gap analysis to be undertaken.

### What tools, information or systems are needed?

The explicit tools, information and systems which may be required include data collection/storage, national protocols, contingency plans, information support systems, pest lists, industry biosecurity plans, diagnostics, money/budget, apps, videos, factsheets, training packages, data storage systems, networks, new surveillance tools, GPS, iPads, vehicles, decontamination kits, communication materials, data collection tools, Material Safety Data Sheets, Personal Protective Equipment, Standard Operating Procedures.

Engagement with universities/educators to ensure they are teaching the basics well and engagement with other training providers to bring about better biosecurity training to enable upskilling of agronomists early will also be important to applying the National Capability Framework.

One summation of the interconnectivity of the seven questions outlined above is provided as Figure 3 below.

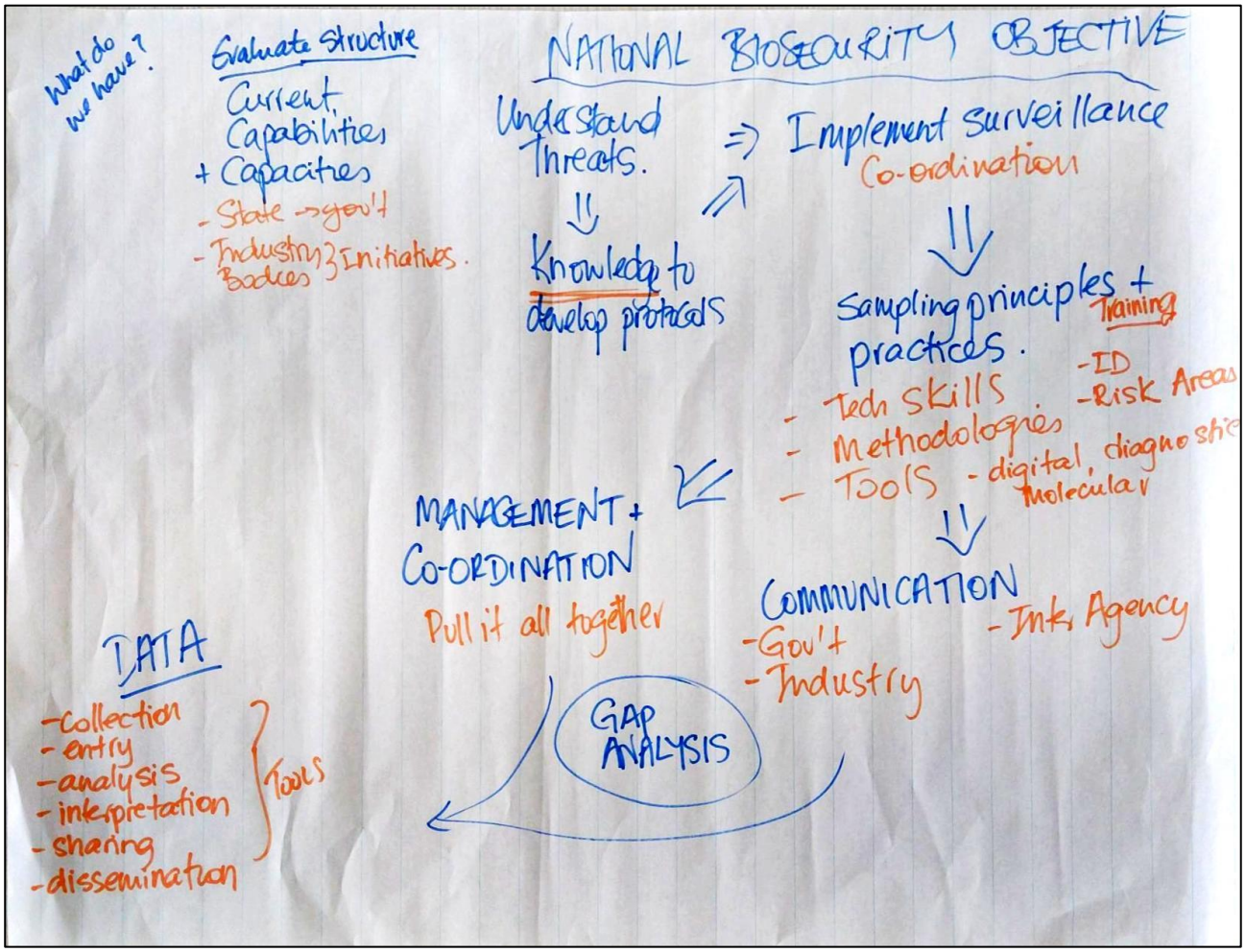



*Figure 3* - Table 4's reflections on these questions

# Appendix 3 – Delivering the National Capability Framework

## How could/should we build and grow our surveillance capability?

- Engagement – change the way we conduct surveillance/diagnostics – e.g. extension of current in-field testing to include educating growers/agronomists/crop scouts
- Encourage interest/passion
- Recognise skills and qualifications
- Invest in tertiary education curriculum
- Invest in innovative technologies to maximise impact of dwindling expertise
- Have programs that support 'understudies' or mentoring as has happened in some industries
- Develop manuals with trouble shooting instructions
- Hold regular training – workshops + residentials together, including seeing pests in the field
- Provide online resources + toolbox
- Swap/second staff during incursions/responses
- Run scenario-based workshops
- Undertake retrospective analysis of response efforts and survey programs
- Develop modules on PSNAP website for different audiences – government, industry, commercial, etc
- Continue to develop content in TOCAL training
- Develop surveillance guides/instructions/protocols and a glossary of surveillance terms
- Hold residentials across policy, industry, operations, science – could be a cross industry-government activity
- How did each of the current surveillance/biosecurity practitioners gain skills and experience to get to where they are now? – could these experiences be applied down the line?
- Encourage competency-based training
- Hold workshops on specific pests and diseases
- Develop pest identification skills networks
- Establish community champions
- Make collected and collated data meaningful
- Learn from Torres Strait – NAQS program builds skills in communities – FrontLine
- Identify ongoing sources of funding
- Establish networks
- Encourage dialogue between government/industry and education sectors to build surveillance awareness and knowledge with a view to embed surveillance in education/build surveillance programs

## What are the top skill areas where capability is needed?

- In-field expertise – people (skills on where/how to sample) and machine (diagnosis in field)
- Turn around time upon detection - capture of data to decision making (24 hours is the goal)
- Up and downstream communication – information flow and sharing of knowledge 'How do we share info without causing trade issues?'
- Field diagnostics
- Surveillance procedures and modern systems
- Innovators (implementing new technologies e.g. molecular/digital)
- Sampling and labelling,
- GPS use
- Data entry + analysis
- Survey design
- Risk analysis and pathway knowledge
- Spatial data collection and handling
- Data analysis – correct inference capability
- Coordination – government/industry collaboration

- Gaps in diagnostics which limit surveillance options
- Spatial analysis
- Plant ID hosts – diagnostics (many field staff know weeds but not production crops species)
- Legal
- Statistics/analytics – data interpretation
- Diagnostics especially infield – many pest/disease groups require specific skills
- Policy development
- Surveillance design modelling
- Data management and control
- Knowledge of farming systems and operations

## How could we transfer knowledge from those who are retiring to those who are emerging?

It is important to note that transfer of knowledge doesn't necessarily have to be related to someone retiring, could just be that they're leaving a position or organisation for a new one.

- Intra and inter-organisation sabbaticals – e.g. hands on learning on pest ID and an understanding of the pest.
- Bring experts in from overseas or send our up-and-coming experts to place where the agricultural systems are similar so the pests and diseases present learning opportunities
- Buy Winnebagos for retiring experts to allow them to tour the country, visiting younger professionals in the field at their leisure
- Support interest/passion
- Develop opportunities for in-field experience
- Mentoring – career paths → continuity of investment and job security
- Documenting processes and procedures and review by experienced people
- Mentoring and knowledge transfer
- Mixed experience – level teams include junior staff
- Make training available at all experience levels
- Career progression
- Encourage staff retention – transient career paths are an issue in government and industry
- Identify technical career pathways recognition of surveillance as a discipline or area of expertise
- Aim for overlapping succession structures
- Invite other people to workshops/meetings
- Hold residentials – build skills and networks
- School education programs
- Investment in science at universities
- Networks
- Publications – to ensure that data/knowledge is stored for perpetuity
- Lecturing opportunities
- Emeritus positions
- Flexible work dynamics
- Aim for staggered intake so no sudden significant loss
- Stable career paths

# Appendix 4 – Improving national capability for data capture

The final session of the workshop focused on improving the national capacity for data capture as data is an important area moving forward, Workshop participants were asked to categorise their ideas according to the timeframe in which they could realistically be delivered. A list of general, or overarching, issues were also raised.

## General

It was proposed that in general terms the following are needed to improve the national capability for data capture:

- Consistency of data formats
- Standardised collection of data – opportunity for standardization of data collection in apps as using just one app is never really going to be possible
- Strong leadership
- Embedded good data collection in government led programs
- National data sharing system
- Knowledge of other data sources
- A single format for data
- Access to more computer power
- Definitions of key terms amongst surveillance practitioners
- Consist data classifications
- Streamlining of data collection methods
- Responsive (2-way) systems (apps) – patterns of pest pressure, export opportunities, production practice improvements
- More industries on board with data collection and collation
- A single data repository
- Clarification of how 3rd party and industry surveillance can be used by government
- Competitive software/app options
- Clarification of why industry/government would participate in data sharing if not to support export
- Resolution of confidentiality/trust issues
- Arrive at a shared understanding of NMDS vs. general surveillance
- Need to look beyond the technological solution to how a specific problem can be addressed– need to broaden our view
- Agreement that data should be shared
- Recognition of the value of data – privacy and competitive advantage
- Learn from BioSIRT which didn't do what it said it was going to
- Engage end users from the start
- Invest in smart data capture – not manually recording things which could be automatically recorded based on location, time/date, etc
- Improved governance of AUSPest*Check*
- Enhancement of image capture as part of surveillance
- Links to other data – inference
- Consideration of data use when collecting data
- Recognition of the value of industry data
- Clarification of who pays for surveillance
- Further investigation of layering data with crop, time, etc

### 0-6 months

- Review, update, endorse and implement NMDS and make available on multiple platforms (portals, PSNAP, etc)
- Identify NMDS interpretation issues, establish clear definitions of NMDS fields, then communicate/disseminate NMDS widely
- Complete a review/gap analysis of current government and industry data sets, including a review of data curation/ownership
- Generate a comprehensive register of related farm data (may be easier to access)
- Consumers of data to define their data requirements to support trade and/or other applications of data and therefore, what they will be used for to confirm the objectives for data collection
- Identify synergies and develop consistent guidelines for capture and storage of data
- Establish a broadscale understanding and acceptance of national standards
- Develop a glossary of surveillance terms
- Establish a detailed understanding of confidentiality issues – value of data sharing vs. reason for not sharing
- Identify structural issues in collection of appropriate data e.g. getting industry and surveillance contractors on board

### 6-12 months

- Agree on consistent data collection methods in national programs that meet data standards
- Establish a clear understanding of what other data sets exist, how well aligned they are with the NMDS, and what we need to do to connect them.
- Make progress towards desensitising data so that it can be shared
- Engage industry to identify what data they are willing to share
- Consider incentives for data sharing between groups (internal and external)
- Develop incentives for sharing
- Conduct audit/scoping-study of data availability
- Identify funding sources
- Address privacy issues with data sharing
- Undertake review of AUSPest*Check* and develop 1st draft of data system – potentially an AUSPest*Check* redesign – and determine if a single data repository creates security and misinterpretation risks
- Develop data auditing process through SNPHS
- Develop SOPs and protocols for data collection relevant to specific surveillance activities
- Achieve agreement from all parties on an integrated surveillance system
- Undertake an assessment of the surveillance data needs of parties in relation to collection, analysis and reporting
- Develop apps which are streamlined and result in consistent data capture.

### 12-24 months

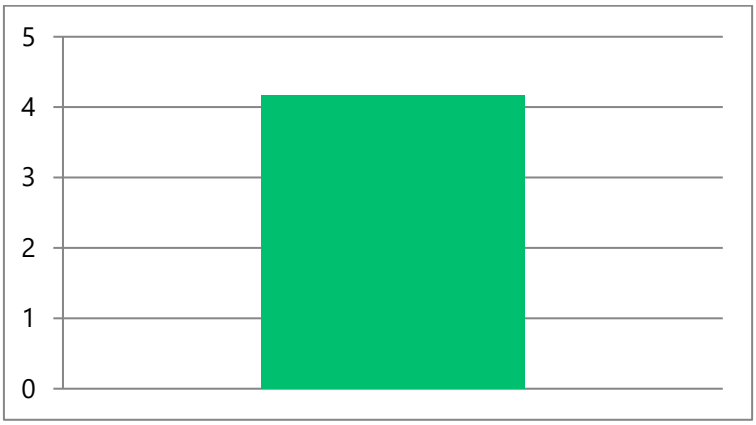
- Deliver TAXAAS
- Clean existing Commonwealth datasets so that government data that benefits industry - i.e market access/area freedom – can be reported/published.
- Complete national diagnostic review
- Complete national surveillance review
- Build relationships between state, commonwealth and international agencies
- Implement enhanced leadership from the Commonwealth – dispute resolution, consistent use of NMDS, coordination of data compatibility
- Complete standardisation of current systems across government
- Engage industry to use data in AUSPest*Check*
- Develop training packages for specific surveillance within particular industries
- Ensure surveillance practitioners have most up to date information via network
- Finalise standardised documentation

### 24-36 months

- Link TAXAAS to state agency, industry, export and other systems
- Review the use of data to demonstrate to other industries why they should engage in data sharing on an ongoing basis.
- Increase generation of data in private sector (e.g. RapidAIM, topVIEW) once data ownership resolved
- Achieve industry buy-in to NMDS
- Implement an open data policy
- Continue to audit data to check for inconsistences and gaps – needs to be built into surveillance programs to ensure auditing as data is collected
- Secure ongoing funding
- Implement a harmonised and integrated data collection and management system which has the ability to be used for market access, area freedom and emergency response – e.g. further develop AUSPest*Check*.

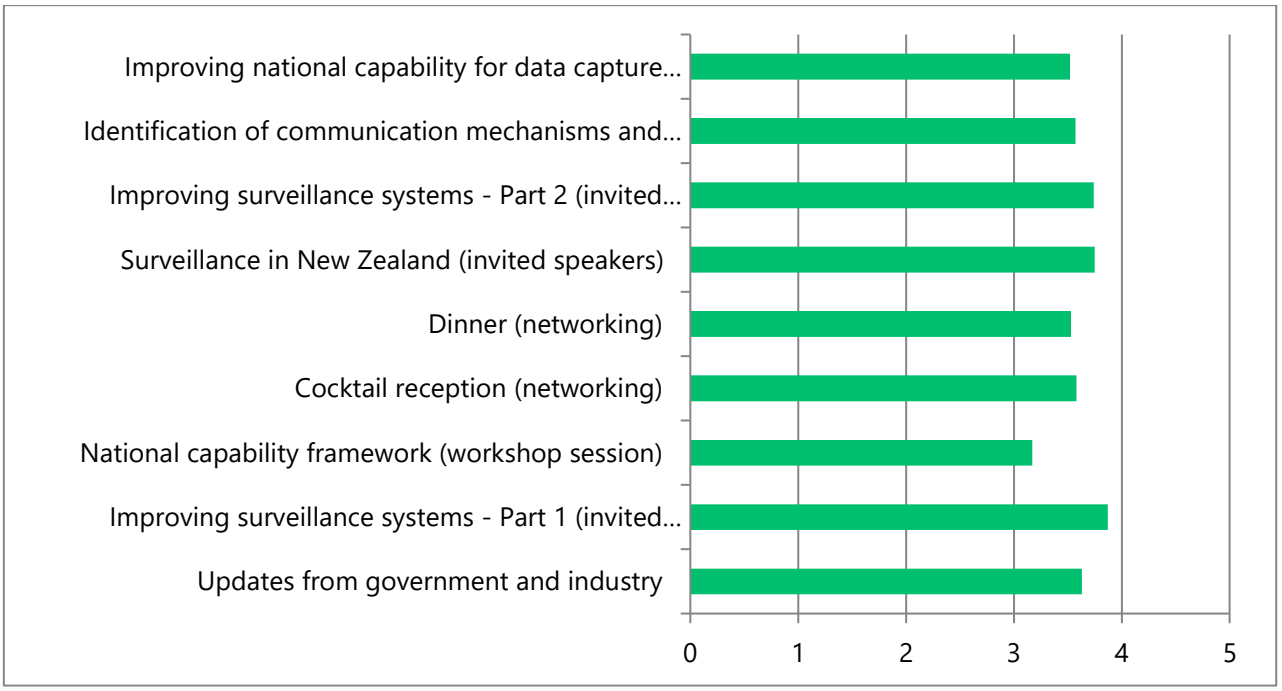
# Appendix 5 - Evaluation responses ASW19

***Q1 How would you rate the 2019 Annual Surveillance Workshop (ASW19) overall? (1 = poor, 5 = excellent)***



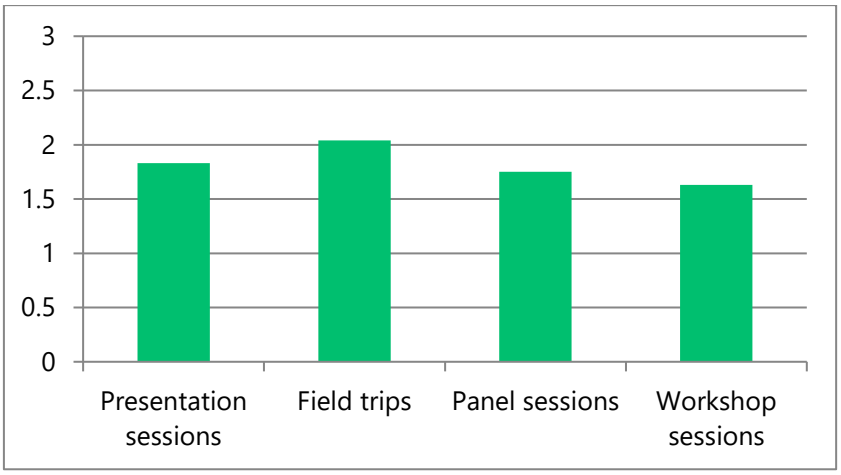

- It was really well organised and had all of the appropriate people in the room. It would have been good to have more senior people from the RDC's but I understand there was a conflicting meeting at the time.
- Some parts were a bit rushed
- Certainly worthwhile. At this stage it may not change or add greatly to what I actually do, but it may in the future and then it would be very worthwhile.
- With the broadening out of the participant list it was a little like ground hog day because of the requirement to bring newcomers on the surveillance journey. Not a bad thing just a little time consuming. The agenda needs to push future requirements so we can get ahead in the surveillance game.
- A good range of presentations and good networking opportunities with government and industry participants.
- The highlight was Bill Crowe actually presenting data on pests the low point was State jurisdictions reporting on what they are doing with regards to surveillance. Maybe scrap this session in future workshops and ask one or two jurisdictions to present some the highlights of their surveillance programs - we should be acknowledging the work they do, not letting them down play their work!
- Not a lot of new or novel information, but good to highlight existing efforts.
- The workshop was very valuable in two ways, 1 workshop content, especially in understanding where various states/ territories are at in plant health surveillance, 2 current trends in plant heath surveillance both in technology and in knowledge of protocols and emerging threats
- It was good to have discussion between industry and government to get a greater understanding of each other's surveillance activities and needs.
- Nice balance of industry/government (state/federal)/ research groups.
- Great to interact with our Australian counterparts.

***Q2 We are interested in the value of the ASW19 sessions to you. Please rate each of the sessions. (1 = poor, 5 = excellent)***



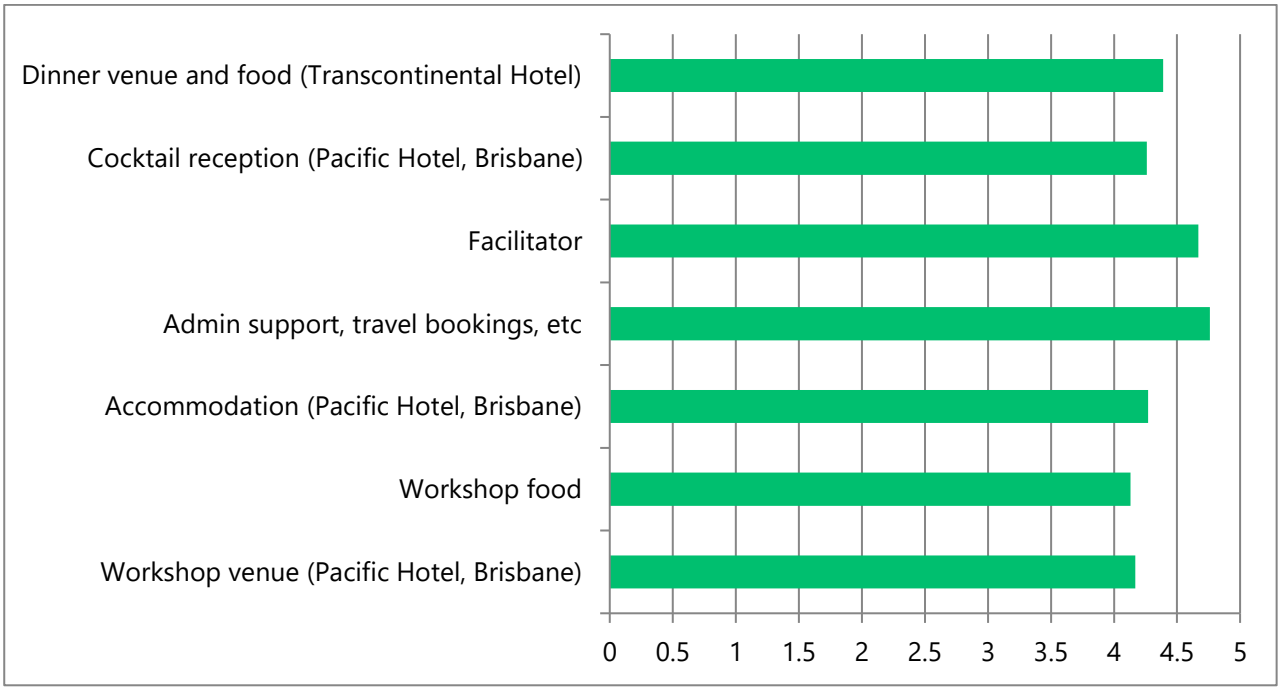

- It was great to have the presentations from New Zealand and I found the presentation by DAWR that listed the border detection very interesting. Quite shocking. There was a workshop session that was difficult to understand what was wanted.
- While I rated the reception and dinner as low I did enjoy both events.
- The session on "Surveillance 101" was a bit confusing as to what the aim of the session was. It may have worked better to have a couple of tables to work on each topic, such as:
  - How can we raise general community awareness and engagement in biosecurity and surveillance?
  - If there is a gap in surveillance skills training, what would an undergraduate subject on surveillance include so as to be useful for jobs requiring surveillance?
  - For existing agencies engaged in surveillance, what gaps are there in capacity and skills and how can we best improve these?
- It could have been useful to have a short summary of surveillance/ biosecurity activities funded by the cotton industry in Australia.
- The discussions around data capture and capability were interesting but I think it will be difficult to get a cohesive approach across all states/ agencies and industries. However, I do think there could be scope to at least aim for minimum national standards for data and perhaps look for opportunities to use a standard approach for industries working in the same farming space (e.g. CRDC and GRDC) which may provide useful data for both groups. Some of these industries probably work independently of each other but may have pests and diseases that affect both, so a coordinated approach to surveillance makes sense."
- Bill Crowe's, Mark Stanaway's, Rory Maclellan's and James Walker's talks were on target and presented excellently.
- The initial workshop session could have benefited from a little more structure. With mixed groups there was a lot of cross talk around the higher level objectives rather than discussion of the workshop questions. Grouping participants by background, industry, government policy, surveillance officers, may have provided more insight into what each group needed to build surveillance capacity.
- Needs more focus on outcomes and follow up actions.
- Good to hear about new technology. I would be really interested to get an email update throughout the year about new developments and opportunities to trial new surveillance technology.

***Q3 ASW19 had a bias towards presentations from invited speakers. Would you be interested in more of the following? (1 = less, 2 = unchanged, 3 = more)***




- I sometimes find it hard to see the benefit of workshop sessions. I think field trips would be highly beneficial. Panel sessions can be very good, if well moderated. Nick did a really good job.
- Everybody has different priorities so hard to strike a balance
- If the presentation sessions were well defined to address specific topics, it could be a good opportunity to share results/ methods. It also often leads to better linkages between researchers. Workshop sessions could be better focused to address specific gaps in knowledge."
- Keynote speakers with Surveillance intel is greatly appreciated and very informative. We need to investigate exactly what the quality of industry data looks like. They may be collecting info that is not relevant for our purposes or of inferior quality or lacking veracity. We can uncover this through presentations that expose us to what industry is all about. The cherry and mango presentations were partially insightful, whereas the bee speaker was good in that it was a warts and all presentation.
- I think that the mix was about right. I was a bit disappointed about the lack of discussion of different surveillance techniques. but perhaps the point of this one was to focus on industry app's for endemic pest reporting? there was no remote sensing, citizen science, odour detection (dogs or sniffer devices), trapping, or even discussion of the value of visual surveys (they actually aren't always as effective as you think).
- Base workshops on some key presentations might be useful. Consider having some industry presentations"
- Structured workshop sessions for a clear purpose
- Work shop sessions can be quite variable in value, depending on the participants at the table and the level of participation. Reporting back sessions can be quite repetitive. It may be better and of more value to have each table discussing different topics, then report back session would hold more interest for the entire session.
- I enjoy a varied format. When there are blocks of speaker after speaker it gets a little hard to maintain concentration after a while. Perhaps mix sessions up a bit more, and possibly make stronger links between speakers and workshop sessions. A field trip would be very useful to illustrate some pathway analysis, surveillance design principles, methodology SOPs WIs etc. If not a field trip, perhaps some case studies. Also, is it possible for the workshop to be held in a state other than Queensland?
- I would like next year to be a 2.5 day workshop. I feel that we only touched the surface on some topics. Even government representatives found out about long running activities/programs being run interstate that would be very beneficial in their own jurisdiction.
- Some time was not well spent during workshop sessions discussing what the question was asking, which might be avoid with more detail on the aims and objectives of each workshop.

***Q4 Please rate the facilities, administration and support provided for ASW19 (1 = poor, 5 = excellent)***




- All of this was really well done!
- There was insufficient chocolate... and nothing sweet for morning tea. Please note that this a minor issue.
- The style of the workshop dinner was good in that meals were not taken at specified seating, this meant that people had much better opportunity to network with more people throughout the evening, rather than being stuck in one spot.
- Standing dinner was excellent for networking (compared with fixed seating).

***Q5 What was the primary benefit to you from attending ASW19?***

- Connecting with government and representing industry
- Greater awareness of the level of surveillance work being done within industry and the need to capture this for Govt use.
- Seeing the progress in recent years toward data capture using field apps and aggregation of that data.
- Being my first attendance to this workshop series, it certainly improved my understanding of who is involved in surveillance and the various agencies/ industries. Very good opportunity to catch up with staff from other agencies who can assist with our surveillance activities (e.g. NAQS, DAWR).
- Networking and intel gathering.
- Seeing how obsessed everyone was with phone app's... and hearing about the third-party contractor situation for surveillance in NZ.
- I got a good overview of all the agencies and stakeholders involved in biosecurity surveillance
- Updated information on activities of stakeholders plus strategies and technology, and networking
- Networking
- I gained a great deal of relevant insight from the presentations, particularly those by James Maino and Paco Tovar.
- Meeting people from industry and other areas of govt
- Extending networks with industry representatives.
- Continued updating of activities in the plant biosecurity space
- Gaining a greater understanding of surveillance activities

- The interaction with the other attendees and overall picture of surveillance in Australia and the issues associated the different jurisdictions and industries.
- Networking and improved knowledge.
- Networking
- Updating knowledge of advances in plant health surveillance and continued contact with the surveillance community.  Secondly having industry and government together was great as each got to hear and understand the 'other' side of plant health surveillance
- Guest speakers
- Improve ways that industry and government can work together to achieve mutually beneficial surveillance and market access outcomes.
- Exposure to new ideas, processes, and projects underway.
- Learned a lot about the Australian surveillance system
- Connections

***Q6 Do you have any ideas or suggested changes for future Annual Surveillance Workshops?***

- More industry invited, especially the RDC's.
- Theme to facilitate greater cooperation
- The talk by Bill Crowe (Emerging pest threats at the border) was great to get some idea of potential threats to various industries and the level of potential entry. This is a knowledge gap for industries such as cotton. We have defined the potential risk pests and diseases to cotton in an Industry Biosecurity Plan but what is missing from that is the data around what is actually detected at the border. This is not freely available to industries from DAWR and it would be good to work on a way to have better engagement of key industries with DAWR data to support these Industry Biosecurity Plans. For example, an industry may consider one pest to be of high importance but it's never detected at the border and another pest to be of moderate importance but it's always detected at the border. Having that knowledge would provide a far better basis for determining where investment should be for industry in preparedness.
- As in my other comments above we need to work with DAWR and PHA to present exactly what the future requirement for surveillance - to the jurisdictions, industry, and from community are.
- Seeing a practical outcome from the things discussed at this workshop
- Current format is appropriate
- Perhaps more practical/applied workshops rather than high level/theoretical ones.
- Offer a number of attendance places for attendees to bring along someone in their work group that would benefit from the meeting. People who aren't exposed to those concepts normally or who are new to their position. It's an intense but useful experience to quickly gain an understanding of surveillance effort in Aus, how industry and govt work together and what challenges are present.
- Demonstration of in-field technologies would be useful.
- Activities in the field Looking at the implementation of surveillance - challenges and opportunities
- Perhaps a presentation of the processes involved in setting up surveillance of detections of exotics, eg early warning, delimiting (once found), post eradication monitoring leading up to (hopefully) achieving pest free status.
- Slightly longer 2.5 days
- Newer venue

***Q7 Have you got any suggestions for the theme of ASW20?***

- Barriers to reporting suspected EPP's.
- Future proofing Australia's surveillance requirements. You could do this in Australia's most modern city - Perth.
- This workshop seemed to be quite focused on insects... could we have more of a disease focus next time. surveying well for plant disease symptoms is more complicated than for insects. And how about some cross over with diagnostics, it's not a survey without an identification at the end.
- Community engagement
- Australian plant pest surveillance - a genuine collaboration between government and industry
- Government-industry collaboration in biosecurity surveillance How it can work to improve the scope and range of biosecurity surveillance.
- Surveillance design is still the most important item for me, particularly pathway analysis and statistical rigour
- Innovation or how industry and government can improve surveillance together
- The discussion around data management could be improved through attendance of more expertise in data science.
- New frontiers in surveillance data collection, collation and storage - AUSPestCheck and MyPestGuide reporter as the future of surveillance in Australia.

***Q8 Do you have any further comments?***

- Well done, you did a great job!
- Keep up the good work
- A workshop on surveillance and biosecurity probably would not have been a thing just 10 years ago, so it's great to see this level of engagement between very different industries and agencies in an attempt to identify opportunities to work together in a coordinated approach.
- Well Done Dave, Sharon and Nick.
- Thank you for organising this workshop
- We need to foster industry ownership of biosecurity surveillance as a collaborative effort with government. But we also need to show value in that collaboration, eg outcome may be better information on endemic pests, early detection means limited impact and better eradication outcomes.
- I thought this was a good event, especially the dinner - good venue/format and great food

***Q9 With which group do you most identify? (Optional)***