

REPORT OF THE APPPC WORKSHOP ON SURVEILLANCE SYSTEMS AND MANAGEMENT

6-10 June 2016

Bangkok, Thailand

Summary

This workshop on surveillance systems and management was the first in a series designed to cover all aspects of plant pest surveillance training for APPPC members.

Firstly, the meeting discussed the present and the revised versions of ISPM 6 and noted the content of the recently published IPPC manual on plant pest surveillance. Then the fundamental nature of surveillance systems was described and how this support national biosecurity and market access.

The workshop then examined surveillance systems and management under a number of headings including: surveillance programme organisational arrangement, programme approaches and application, programme management where the recent incursion of Russian wheat aphid into Australia was used as an example. This was followed by considerations of: surveillance programme planning, programme prioritisation (when participants constructed lists of priority pests for the region), programme design and methodologies, system and programme resourcing, programme stakeholder engagement (taken as an integral component of any surveillance programme), programme delivery, programme information management, analysis and pest status determinations and programme reporting and communication.

The workshop was supported by clear topic descriptions, relevant examples from the experiences of the Australian facilitators and participant discussions.



Report

1. Opening of the meeting

Participants introduced themselves to the meeting.

Dr Piao welcomed participants to the meeting. He noted that ISPM 6 is one of the most important ISPMs and listed the various meetings that the APPPC has held in working with APPPC countries with

this standard. The 29th session of the APPPC decided to work further with ISPM 6 and planned a 6 year programme. After this workshop meeting, there will be an informal working group meeting on the IPPC pilot programme for pest surveillance. It is hoped that this workshop meeting will develop a team to progress the APPPC plan for surveillance. This workshop will also lead to the identification of pests that will act as subject items in the work plan.

2. Overview of the workshop

2.1 APPPC Surveillance Implementation Workshop Plan

Mr Chris Dale introduced the workshop plan. He thanked all those involved in the preparation and hosting of the meeting. The intent was to make the workshop as interactive as possible.

Surveillance includes a large number of subject area and these, it is hoped, will be covered in the 6 year work plan. The week was not to deal with the highly technical areas but with the basic areas of organisation – examining the minimum requirements for surveillance and the fundamentals of surveillance management. The areas examined include systems management, planning and prioritisation, operations and communication, field activity, and surveillance information management and reporting. Later in the week, the workshop will discuss management and the need regional harmonisation, financial support, and stakeholder involvement.

APPPC Surveillance Implementation work plan 2016-19

This includes the following components:

- Plant health surveillance systems management (2016)
- Surveillance planning, coordination and delivery (2017)
- Surveillance information management systems (2018)
- Surveillance statistical analysis, mapping and intelligence (2019)
- Surveillance communication, reporting and response (2020)
- Plant health surveillance pest-free area surveillance (2021)

Mr Dale noted the present and revised ISPM 6 (which will be out for country consultation on July 1st) and the Guidelines for Surveillance manual. This material provides guidance:

- to understand the requirements of a programme, policy and management
- for surveillance management on the implementation of the revised guidelines
- on governance and management systems essential

2.2 ISPM 6 Revision of ISPM 6 – National Surveillance Systems

Dr Hedley discussed the content of the present ISPM 6 with its sections on:

- Requirements that included those for General surveillance and Specific surveys
- Good surveillance practice
- Technical requirements for diagnostic service
- Record Keeping
- transparency

The IPPC Expert Working Group on the revision of ISPM 6 met in Auckland, New Zealand in September 2015 and their discussions included the following points:

- that the revised standard should provide simple but technically relevant and scientifically sound guidance for both the technical and governance components of a surveillance system

- that though harmonised protocols had been suggested, these were thought to be too detailed for an ISPM
- a National Surveillance System should have the necessary infrastructure for surveillance programmes (building blocks) and these components described
- more information on general surveillance would be provided as requested by CPM members
- the data elements, for data management, of the original ISPM 6 were sufficient with minor modification for the revised ISPM
- and that NPPOs should recognise the importance of recording negative (observational) data

The revised draft ISPM 6 has three major sections:

- Components of a National Surveillance System includes: phytosanitary legislation and policies, prioritisation, planning, resources, documentation, training, auditing, communication and stakeholder engagement, and pest diagnostics
- Surveillance design with General surveillance and Specific surveillance
- Information Management systems with surveillance records and analysis and reporting

The content of the newly published Plant Pest Surveillance Manual was compared to that of the revised ISPM 6 with the conclusion that despite using different section headings and different topic organisation, the revised ISPM and new manual cover the same basic areas of surveillance.

2.3 IPPC Plant Pest Surveillance Manual (2016)

The manual provides a guide to the principal requirements of surveillance programmes with guidance on policy and management functions, the implementation of the revised ISPM with guidance on governance and management systems to support and validate data records and reporting.

The manual is composed of four main chapters – Organisational arrangements (legislation, funding, management, resources, information management, communication), Planning and prioritisation (planning, prioritisation, design, response, delimiting and trace-back surveillance), and Operations (resource requirements, methodologies, data collection and submission, field communication and feedback, interaction with stakeholders, supervision of activities), and a comprehensive bibliography.

3. Fundamentals of Surveillance Systems and Programmes

Mr Dale noted that surveillance is now recognised as an essential core activity of plant health systems that support biosecurity and market access. It provides the technical basis for phytosanitary import requirements, pest free areas and pest reporting and eradication. The surveillance system should contain the basic building blocks – now listed in the Components of a National Surveillance System presented in the revised ISPM 6.

The national surveillance system should contribute to national biosecurity and market access and consists of a number of programmes and the infrastructure and governance to implement them:–

- Official (pre-border, border and post-border)
- Pest specific (fruit flies, timber pests, SALB etc.)
- Commodity specific (citrus, wheat, rubber)
- Trade and market access specific (PFAs, delimiting surveys)

Mr Dale noted that in Australia there are several plant health surveillance programmes that are running at the same time. There is a national plant biosecurity surveillance strategy – which describes the whole system and how it works.

A discussion of the contents of a National Surveillance System followed. It should:

- Meet international standards – are ISPM 6 requirements being met?
- Be scientifically sound and defensible – follows risk assessment principles
- Be sustainable (financially, operationally and politically) – this is often difficult to achieve in the political environment
- Be transparent and auditable – must provide confidence to counterpart agencies
- Be consistent – through all aspects of the system pre border to post-border
- Meeting internationally recognised protocols (field and diagnostic)
- Meeting national domestic and international priorities
- Support national agricultural productivity, protection, market access and pest management priorities.

Surveillance responsibilities were discussed with the surveillance areas including – early warning, early detection, delimiting surveys, area freedom, business performance and policy.

A NPPO Surveillance system was illustrated diagrammatically. This included off shore, border and onshore systems (national, targeted, domestic). The Australian example of an off-shore surveillance programme detailed the collaboration between Australia and their near neighbour countries of Timor-Leste, Papua New Guinea and the Solomon Islands. An NPPO national on-shore surveillance was described as including components relating to community, industry, states and National Authority sectors.

Mr Dale stated that much of the revision concerns having the other parts of the agricultural community taking responsibility in the system and that one of the biggest challenges has been to convince stakeholders of the principles of managed risk and that inspection at the port will never be sufficient for a sound biosecurity system. It was stressed that incursions will occur – and it is the reaction of government and industry that is the critical matter. It is a shared responsibility. Pest surveillance can help to find pests earlier – but this cannot be done by government alone. Now this is understood for fruit flies and there is co-funding for fruit fly surveillance. The grain industry has now moved to working with general surveillance using agronomists as surveillance personnel. The industry is proactive and innovative – with drones etc.

The operation of surveillance systems within a plant biosecurity continuum was described as:

Pre-border surveillance – identifying and managing pest risk offshore; Border plant protection surveillance programmes – monitoring pest areas and post entry quarantine location in partnership with industry and the community to detect exotic plant pests, enhancing responsiveness to traditional quarantine controls, the importance of port surveillance was stressed; Post-border surveillance at the farm, forest etc level.

All of the programmes of the plant biosecurity continuum should link together to provide a unified system – this needs a policy and a strategy. The pre-border programme is a most important part of the system. It identifies regional and international plant pest risks from both regulated and non-regulated pathways, can be delivered through specific and/or general surveillance programmes and assists in the early detection, preparedness and management of exotic plant pests.

4. Surveillance Programme Organisational Arrangement

Dr Gregory Chandler noted that the structures and capacities of NPPOs in regards to surveillance are variable. Different management systems may be required for the different types of NPPOs. There must be flexibility and the surveillance must be set up to suit the ability and capability of the NPPO. The action must be proactive not reactive. Systems must be supported by legislation and policy.

Dr Chandler discussed the advantages and disadvantages of different organisational systems - where a quarantine section is within a plant protection department, where there is an autonomous or semi-autonomous NPPO or where there is an integrated institution. A check of the workshop participants revealed that many of them were from NPPOs that are not under the agricultural ministry in their country.

When establishing a system, the most productive organisation should be considered. The manual does reflect the fact that it has to be used in different countries with different organisations.

A national biosecurity strategy should involve proactive industries and shared responsibility.

Complex systems have many challenges; for example, there need to be clear communication lines between federal and state authorities. It was noted that the Philippines have two sections – the quarantine section deals with border and surveillance for specific pests while the other deals with domestic pests but collaboration is limited. Mr Dale described the amalgamation of surveillance activities in Australia so that duplication was removed and directions restated. It was observed that Thailand had four government departments represented at the meeting. Bangladesh suggested that capacity development assistance was needed. The participant from India noted that no central system for gathering information on surveillance was present in India.

5. Surveillance Programme Approaches and Application

Dr Ajay Niranjane discussed aspects of general surveillance. He discussed the problems of having identifications done by individuals which are not checked by government specialists. The benefits of general surveillance were noted – absence, transience, or no longer present and helps the detection of pests. Overall, general surveillance provides confidence in records. There are many sources of pest reporting and information, as listed in ISPM 6, and they need to be formatted, checked and audited. General surveillance is more effective if the pest biology is well documented, the pest or the symptoms it causes are readily detected, training programmes can be conducted and plant health monitoring directly targets the host.

Dr Niranjane described the elements of a biosecurity system as:

- Effective quarantine measures in place to minimise risk of pest introduction
- Legislation and regulations in place to mandate reporting and official control of the pest if detected
- Reporting system in place
- Procedures for awareness raising processes of pest are directed at relevant stakeholders and community groups
- Pests are on national, regional or industry priority lists
- Surveillance activities are recorded and available to government authorities
- Diagnostic expertise and tools are available

This was followed by a discussion of the General Surveillance Framework which can be used as a model by NPPOs. It has been tested with citrus canker, Khapra beetle, onion smut and Asian Papaya fruit fly. The framework was found to be sufficient to determine the pest status but that the results should be supported by specific surveillance. The usefulness of general surveillance depends on the quality of data not quantity and requires an assessment of resources.

6. Surveillance Programme Management

Mr Dale made note of the official notification from the Australian Government relating to the incursion of the Russian wheat aphid into Australia. The wheat industry is a multi billion dollar export industry in Australia and the aphid was one of the most important pests for the wheat and grain industry. Mr Dale indicated that a number of delimiting surveys had been undertaken to assess to distribution of the pest and to date it had been found 200km from the point of origin, reinforcing the role of surveillance in biosecurity pest management. West Australia is free from the pest at the moment. The pest status will be updated as surveillance activities continue. This is a good example of the importance of surveillance, national coordination and communication. The impact of this pest is enormous for Australia and despite the good quarantine and efficient biosecurity system, pests can also travel and establish by natural means such as wind pathways.

The Emergency Planning Committee is led by the Chief Plant Protection Officer. The distribution of new pests is determined – then formal notification is supplied. This pest will have considerable domestic implications for the Australian industry. There is an emergency fund available with contribution from all states and territories. It was noted that approximately \$360 mill was spent on Equine Flu eradication, management and compensation.

In Queensland and the Northern Territory – banana diseases have been eradicated – but these have been of no concern to Tasmania (other than assist with resources). Each state and territory has its own priorities and concerns and strategic plans. Western Australia will have to supply monitoring data and management schemes to overseas markets. This will constitute a pest free area. With PCN in Victoria, this is controlled by mandatory surveillance and legislation i.e. official control. This legislation is in place throughout the Commonwealth.

The National Surveillance System in Australia includes all of the surveillance programmes – for pests or commodities and trade and market access programmes. The Dale-Niranjane programme was described and includes the following components:

- It has international engagement by means of the IPPC, APPPC, and PPPO
- The core function is early detection offshore (per-border surveillance)
- Pest data is aggregated and analysed to assess implications
- It manages biosecurity risk offshore (for Timor, PNG, Solomon Islands)
- Biosecurity systems in neighbouring countries are strengthened
- Surveillance and diagnostic work with Indonesia
- Work with Timor-Leste, Papua New Guinea and the Solomon Islands
- IPHSP Information management – design and delivery surveys, reports of pests in the region. The information is critical, manage the data, analyse it and communicate it.
- Plant pest notifications, intelligence and country risk reports, mapping and modelling risk frameworks. GIS used by a number of countries – Japan, Malaysia, Pakistan
- IPHSP operations in the different countries
- IPHSP Information management – brochures and reports

Surveillance Programme management structure

Organisational arrangements differ between countries. They should be managed and coordinated through a centralised national pest surveillance manager – with an appropriate chain of command. Relationships should be established between the NPPO and the third party providers. The National surveillance system manager will work with a National Surveillance System Coordination Network. This group works with Technical specialists (diagnostic specialists, information specialists etc.),

administrative and logistic support (resource management, auditing and verification, communication and reporting etc.), and industry and third party providers (industry and institutional stakeholders, universities and research institutions).

The surveillance programme management includes consideration of:

- National Surveillance systems and programme legislation

Appropriate national legislation, clear provisions in relation to powers, authority and responsibilities regarding surveillance are required. Legislation is critical and is the highest level of management. Queensland is also changing their legislation this year (as is the Commonwealth). Noted that there have been difficulties with non-compliant growers – involving considerable resources.

- Programme funding arrangements

Costs can be high and government funding might not be sufficient. Collaboration with stakeholders may be needed. Industry and producers can contribute where benefits are demonstrated. Funds may include contingency and other emergency funds, also technical assistance/cooperation to facilitate trade.

- National surveillance system and programme policy and strategies

This outlines the rationale and lists the priorities regarding trade and the protection of resources and the environment. A clear presentation of the strategy is a tool to encourage support for the programme.

- National Surveillance System and Programme Authority

The NPPO needs to assume all responsibilities for the plant pest surveillance programme. In a decentralised system, levels of authority may be delegated to national, state, province county or district levels. The NPPO may authorise relevant institutions and personnel to work under its authority, but the NPPO retains responsibility for all actions taken on its behalf.

The responsible authorities in a number of countries were identified.

- National Surveillance System and Programme Responsibilities

These include: appoint national surveillance managers, establish a national plant pest surveillance committee that includes stakeholders and is coordinated by the NPPO, selecting and approving partners, public awareness, training and verification, preparation of training materials.

- National Surveillance System and Programme Resources and Budget allocation

NPPOs need a clear understanding of priorities, resource requirements, those that are available and those that are required, the providers of those resources and their sustainability.

- National Surveillance System and Programme Engagement Mechanisms

These are needed between stakeholders and NPPOs so that responsibilities can be assigned and agreed. There could be a Service Level Agreement, or MO Agreement. NPPOs should ensure that stakeholders are properly informed as to the responsibilities and deliverables are clearly defined.

- National Surveillance System and Programme Performance Review

Programme should be technically sound and include effectiveness supervision, and the programme should be regularly reviewed. This review would establish that the system is credible, quality is assured etc.

- National Surveillance System and Programme monitoring and evaluation

This ensures that there is effective programme management and reporting and may include internal and external audit arrangements.

7. Surveillance Programme Planning

The NAQS was described as an example. This covers some 7000kms of coast. Very few staff involved and the programme relies heavily on risk area analysis. It covers Western Australia, Northern Territory, Queensland and deals with pastoral farms in northern Western Australia and Kakadu National Park. Each risk area is detailed with risk factors (plant and animal). The Torres Strait is a high risk area and the risk management factors are listed. The high risk areas are visited every year

while low risk are visited once every 5 years. Sometimes it is impossible to check sites at the right time of year for pest detection. The operational plan is a five year plan with the budget, and includes the team composition and the cost of diagnostics. Weed control involves more expense than any other pest type. A botanist is included in the teams. Usually there are 4 in a team. The post-survey diagnostics is also relevant.

A 1 year detailed plan is developed. The properties to be visited can be identified the previous year. Access is arranged by the rangers. The detailed planning for a survey requiring the team, or properties was described. Feedback to property owners is regarded as an important part of the communication. The Torres Strait programme involves 35-40 traps visited every fortnight all year for 25 years. Specimens are sent up to 1200kms to a laboratory for diagnosis on a fortnightly and monthly basis.

Planning includes:

- Cost benefit analysis – for trade facilitation, protecting local and export industries. There must be efficient use of resources with due responsibility. Surveillance costs must not outweigh the benefit to industry and natural areas. There must be prioritisation.
- Considerations include: stakeholder interest, importance of the commodity, risk of pest introduction, estimated economic impact of pest incursion, technical resource availability.

Key issues considered include:

- Strategic rationale (i.e. reason to exist) is: – threat detection and contingency, early warning, rapid, appropriate response, preparedness for negative impacts (productive sectors, environmental damage)
- Feasibility - technical – management resources, scientific expertise, availability of diagnostic tools
- economic – cost of response, eradication or management
- Stakeholder relations and support – established track record, identify purpose and benefit, establish relationships
- other considerations include – difficult plant pest surveillance, pest specific surveys, communication plans (public and producers)

8. Surveillance Programme Prioritisation

In the discussion, one participant noted that the priority for surveillance was linked to the needs for export. Another participant stated that surveillance was conducted to protect the staple food crops and to stop the introduction of important pests. Pests of economic importance are prioritised for many countries. The importance of environmental protection was noted but participants did not stress these items. An Australian example was mentioned – myrtle rust would have a huge effect on the environment.

A prioritisation process is an essential part of a national system. There needs to be strong collaboration and coordination to ensure the information, analysis and consultation needs are met to ensure that outcomes support the decision making. Surveillance programmes are really an investment in the future. Prioritising involves funding. Surveillance provides answers to questions – we need to develop the questions.

The system in Australia has been developed over the last ten years. The development of priorities involves the consideration of a number of factors. Prevention, preparedness and mitigation with pre-border, border and post- border – and industry considerations and environmental consideration.

Factors include: the pest itself, pest status, the pest impact, pest entry i.e. pathways – insects, spores wind or controls – natural pathways need to be considered, not only the PRA process, pest establishment and spread – and a clear benefit from nationally coordinated action or approach.

National surveillance programmes are meant to provide confidence for importing countries.

Prioritisation exercise

Group 1:

Priority commodity list – rice, citrus, rubber, mango, coffee, banana, vegetables, seeds cut flowers , coconut, corn

Pest list – fruit flies endemic and exotic, SALB, scale insects, Huanglongbin, khapra beetle, stem borer for rice, mites, Panama disease, last two from a long list ... red palm weevil and mango seed and pulp weevil

Group 2

Priority commodity list - Rice potato vegetables, fruit

Pest list - BPH, Fruit fly, Rice and corn stem borer, white fly (vegetables and fruit crops/vector), RIFA, rice blast (wheat and rice), black Sigatoka of banana, Brown marmorated stink bug, HLB/Citrus psyllid, *Phytophthora*, *Xylella* (glassy winged sharp shooter)....GAS, thrips, BMSB, termites, Khapra beetle.

Exercise pointed out the difficulties of reaching an agreed conclusion with limited resources to meet trade requirements, domestic protection etc.

The Australian list of 42 priority pests was presented and discussed in relation to environmental, economic, agricultural and social prioritization.

9. Surveillance Programme Design and Methodologies

Dr Niranjane noted the difference between reaction and response. In surveillance we are dealing with response not reaction.

Surveillance design

Goals of a regulatory surveillance programme is to have early detection and rapid pest eradication. The purpose of survey can be related to: a pest list, host list, early detection of a pest, pest free areas, ALPPs, pest management, delimiting, or a community network reporting system.

The definitions of the types of survey are:

Detection survey – survey conducted in an area to determine if pests are present

Monitoring survey – ongoing survey to verify the characteristics of a pest population

Delimiting survey – survey conducted to establish the boundaries of an area considered to be infested by or free from a pest

To design a survey you have to define the purpose e.g. pest status to support market access – then decide if it is cost effective.

Designing a specific survey according to ISPM 6: should include survey title and authors, and the reasons for surveying may include: creating a list of pests, demonstrating a baseline list of pests before ongoing monitoring for changes in pest status, pest management and control, early detection of exotic or established pests, delimiting the distribution of a pest, monitoring progress in pest suppression campaign.

Factors to consider include:

- Identify target pests – pest names, vectors, impacts, characteristics, reference specimens and images, information sheets
- Identify target host – host name, value of host or commodity, growth habit and life cycle of host plants, accessibility of the host plants, regional distribution of the host, - alternative hosts
- Site selection, identifying the survey area, survey districts, survey places, field sites and sampling sites. Methods for choosing sites - number of sites, which to survey, survey types affect site selection
- Pest survey sites. Selection of sites determined by: reported presence and distribution of the pest, biology of the pest, distribution of the host plants, climatic suitability of sites for the pest
- Pest sampling. Calculating sample size: statistical parameters for sample size calculation, formula for detection surveys, formula for monitoring survey, determining sample size for multiple levels of site selection
- Pest survey timing. Determined by: life cycle, phenology of the pest and its hosts, pest management programmes, whether the pest is best detected on crops in active growth or in the harvested crop

For a pest list of commodities produced under specific cultural practices or the preparation of host pest lists where data from general surveillance is lacking the selection of suitable survey sites may be determined by:

- Geographical distribution of production areas, pest management programmes, cultivars present, points of consolidation of the harvested commodity.

Methods of collecting pest specimens. Points to note include: the use of generic specimen collection protocols, labelling specimens, general guidelines for transporting specimens, special consideration when collecting a new exotic pest.

Methodology

Points to note include: electronic data storage, people involved (check diagnostic skills consistency), permission to visit sites, pilot study (practice run), perform survey, analyse data, report results (summary, press releases, formal report etc).

10. Surveillance System and Programme Resourcing

Effective resource planning is essential to ensure that field activities can be delivered. It is the responsibility of the surveillance manage and operational staff to ensure that staffing, financial and physical resources are available. Financial resources must be available for travel, accommodation, per diem, surveillance equipment and scientific supplies.

Physical resources include: infrastructure resources (lab buildings), equipment and supply resources (vehicle, traps), data collection resources (GPS units, smartphones), public awareness resource material (calendar, caps etc).

Human resources involve: staff training - different skills and competencies required, maintenance of technical integrity, include relevant technical skills with updated training and training assistant officers. Succession planning and staff retention need to be considered. It is sometimes difficult to maintain skilled staff and to replace retiring staff.

Workplace health and safety – safety must be considered with protective equipment, security gear, first aid equipment etc.

11. Surveillance Programme Stakeholder Engagement

Stakeholder engagement is critical to a successful programme. There needs to be cooperation for property access from commercial, community and government sources. NAQS put up posters on which scientists are to be visiting. May be in the local language if necessary. Calendars and a publicity brochures are available.

Consideration to stakeholders includes behaviour to:

- show identification, maintain professional appearance, provide contact information, provide relevant information, ask entry permission every time, allow owner to accompany you.
- not to discuss survey results, avoid crop damage, leave property as you found it, advise owner of samples taken and results forthcoming, comply with any biosecurity and sanitation protocols that may be in place.
- Care with communication, do not scare them. Survey feedback is welcome. Employ appropriate operational sensitivities. Generate goodwill – easier access on later occasions.

The roles of different groups can differ:

- Research groups – universities, subject specialists, can provide specialist training, arrange and perform diagnostics.
- Industry groups – contemporary pest prevalence on property information, provide staff to be trained.
- Producers and natural resources – have up to date information, service traps, forestry and parks groups can report outbreaks, report incursions.
- Consumers and media – encourage reporting new cases, ease of communication, with media – disseminate information and education and public awareness.
- Community and school presentation – speaking to schools is good way to educate, community talks can be more relaxing.

12. Surveillance Programme Delivery

Factors to consider include: planning, coordination, delivery, review, and reporting. Coordination includes checklists for activities and briefings for NPPO, industry and stakeholders. Delivery involves communication among the team and possible response staff. Reporting is the essential result. Delivery includes:

- Pre-survey briefings – ensure survey preparation, equipment methodologies, communication data requirements and stakeholder engagement are discussed and agreed prior to undertaking activity.
- Standard Operating Procedures – should be used to ensure surveillance staff carry out operations correctly and include validation and auditing.
- Survey logistics are needed for transport, accommodation, site biosecurity.
- Survey communication – in-field communication, for surveillance outcomes and survey delivery issues.
- Survey equipment – traps, consumables, diagnostic equipment, sample processing equipment.
- Survey sampling - random and systematic sampling.
- Surveillance trapping – field trapping can be used for many purposes.
- Sample collection – have unique number, packaging, preservation, permits.
- Surveillance data collection – consistent data collection (with P-tracker0 and collect negative data.

- Pest surveillance communication - Post-survey briefing including preliminary finding, delivery issues, methodology issues, stakeholder feedback, diagnostic considerations, emergency response considerations. These briefings are critical and most valuable.

13. Surveillance Programme Information Management

Large numbers of staff or staff changes make it imperative to have information systems that can provide consistent results. There is the need to:

- determine national and regional biosecurity risks,
- be able to support claims of pest absence,
- develop pest lists to justify phytosanitary import requirements,
- inform eradication and control measures,
- meet international reporting requirements ISPM 17 – pest reporting.

The surveillance information management system can be illustrated with an infinity diagram. This shows the continual flowing of information from operations (data collection) and information management (data analysis and reporting). This moves from Stakeholder engagement to planning and coordination to survey delivery to diagnostics and data consolidation to data analysis and data extraction. This is verified by general surveillance where available. Then the information is used for communications and reporting.

Data can be obtained for pest free area, for surveillance, pest reporting, protection against specific pests e.g. SALB – regional standards. Surveillance information management system process data collection to data consolidation to data verification, to data management to data analysis, interrogation and reporting. There is a process with standards, who does the work, where is the data kept, the roles of staff, how is it stored, how is it verified, data management and analysis, who has access.

There needs to be a data policy to provide a consistent approach to the publication and use of data.

The collection of data in the field is important. The P-tracker provides a consistent approach to data collection and compliance with minimum data standards. The roles and responsibilities of involved staff need to be determined with a great range of staff involved in data management.

Surveillance information roles and responsibilities need to be recognised – data collection, data processing and database administration. Surveillance verification and quality assurance – deals with records being checked, spelling, scientific names being current, geospatial information.

Surveillance information management and databases - data management tools should effectively manage large volumes of surveillance data, search and query large sets of data, and manage multidisciplinary surveillance records.

Surveillance information analysis and reporting – provides pest status reporting and deals with publishing surveillance data in scientific journals and publications. These reports are part of a marketing push to support surveillance activities.

14. Surveillance Analysis and Pest Status Determinations

These activities support the early detection of pests, support trade, describe the distribution of pests, delimit the full extent of pest populations, measures the success of a biosecurity system, enables management, develops lists of pests or hosts in an area, monitors progress of an eradication programme, and enables reporting.

The NPPO should provide appropriate diagnostic services – which include expertise in relevant disciplines, adequate facilities, access to specialists, facilities for record keeping and for processing and storing specimens, standard operating procedures and the verification of diagnoses.

Spatial data and mapping can provide information for pest free areas, for policy impact measuring, the identification of national surveillance priorities, pest status baselines, and implementation and monitoring strategies.

Sampling for detection or information – confidence levels for pest detection depends on requirements of trade partner. Absence of detections does not mean pest absence. This can be verified by general surveillance. The level of confidence is difficult to obtain for negative data. Information is captured from IPPC notifications.

Pest status database - database is used to aggregate surveillance information (specimen records and general surveillance information) available on plant pests and utilise this to support a policy decision on the determination of the status of those pests in Australia (as per ISPM 8 – Determination of pest status in an area).

Surveillance and analysis is the basis of good decision making but needs to be part of a logical structure with sound rationale.

15. Surveillance Programme Reporting and Communication

Good communication is vitally important to use surveillance information effectively. This ensures understanding and support by stakeholders. Communication is improved by good coordination, planning and prioritisation, design and resources.

Communication considerations include: – officers need to take into account information needs of the audience, the urgency of the decision making, to determine extent of engagement that will improve outcomes, cost of communication and engagement to NPPO and external stakeholders.

Good NPPO internal communication ensures programme is efficient and effective. There needs to be lines of communication and with field officers to share experiences, knowledge and problem solving. Also, communication is essential among technical managers and support staff re budgets, resource procurement and staffing issues. With external communication, staff must ensure communication with all interested parties – industry groups and third party providers.

Communication of information must be used strategically. With the general public there are outreach programmes, effective cooperation, plant movement restrictions and reporting of observations.

Surveillance Programme reporting – NPPO has the responsibility to disseminate results on outbreaks and control efforts. General surveillance feeds into reports to trading partners. Results should be presented in a timely manner. Pre-survey briefing and reports, in-field communication and post-survey reporting with the findings and diagnostics.

Awareness raising and advocacy is communication and helps stakeholders understand the goals of the surveillance programme. Different stakeholders require different communication approaches. High level officials, private sector, academia, general public.

Should be a task force to deal with quarantine pests and this should start with children at school.

16. Workshop Conclusion

The intention has been to cover the management aspects of the manual. This will have provided a basis for participants to work with in their countries. Mr Dale asked participants if further assistance was required or if there were some aspects of a programme needing attention to build more effectiveness. He offered further assistance if necessary.

There has been some discussion on whether the 6 year programme be reduced to 3 years. But this is what was decided by Session 29 and should remain in this form for the moment. It was stressed that the programme is a great advance for the APPPC members.

The revision of ISPM 6 will be out for consultation in July and participants are encouraged to provide their comments. Participants are also encouraged to use the new IPPC manual on surveillance.

Dr Piao, in closing the workshop, noted again the importance of ISPM 6. The shift of perception of traditional surveillance with the purpose of pest monitoring for field crop pests to surveillance and response is difficult for some NPPOs but is an essential part of the new understanding of the application of phytosanitary measures. The cases of *Brontispa* in coconut and the phytoplasma in Sri Lanka have shown the need for the collaboration of industry, producers and government is necessary to successfully deal with these problems.

Timetable**Day One: Monday 6th June - National Surveillance Systems and Management**

Time	Event	Remarks
09:00-10:00	Registration	In front of the "Air" meeting room, 10 th Floor
10:00-10:30	Opening Ceremony Opening Remarks by Secretary of APPPC	Dr. Piao Yongfan
10:30-10:45	Overview of the Workshop - APPPC Surveillance Implementation Workshop Plan - ISPM 6 Guidelines for Surveillance Revision - Plant Pest Surveillance Manual	Chris Dale NZ Counterparts
10:45-11:00	Group Photograph / Morning Tea	
11:00-12:30	Fundamentals of Surveillance Systems and Programmes	Chris Dale
12:30-14:00	Lunch	
14:00-15:00	Surveillance Program Organizational Arrangements	Dr. Greg Chandler
15:00-15:30	Afternoon Tea	
15:30-17:00	Surveillance Program Approaches and Application	Dr. Ajay Niranjane
17:00	Close of Day One	Chris Dale

Day Two: Tuesday 7th June - Surveillance Program Planning Prioritisation and Design

Time	Event	Remarks
09:00-10:30	Surveillance Programme Management	Chris Dale
10:30-11:00	Morning Tea	
11:00-12:30	Surveillance Programme Planning	Dr. Greg Chandler
12:30-14:00	Lunch	
14:00-15:00	Surveillance Programme Prioritisation	Chris Dale
15:00-15:30	Afternoon Tea	
15:30-17:00	Surveillance Programme Design	Dr. Ajay Niranjane
17:00	Close of Day Two	Chris Dale

Day Three: Wednesday 8th June - Surveillance Operations and Communication

Time	Event	Remarks
09:00-10:30	Surveillance Programme Resourcing	Chris Dale
10:30-11:00	Morning Tea	
11:00-12:30	Surveillance Programme Methodologies	Dr. Ajay Niranjane
12:30-14:00	Lunch	
14:00-15:00	Surveillance Programme Stakeholder Engagement	Dr. Greg Chandler

Time	Event	Remarks
15:00-15:30	Afternoon Tea	
15:30-17:00	Surveillance Programme Delivery	Chris Dale
17:00	Close of Day Three	Chris Dale

Day Four: Thursday 9th June - Field Trip (Surveillance Field Activity)

Time	Event	Remarks
09:00-10:30	Start Plant Health Surveillance Field Trip	Chris Dale
10:30-11:00	Morning Tea	
11:00-12:30	Plant Health Surveillance Field Trip	
12:30-14:00	Lunch	
14:00-15:00	Plant Health Surveillance Field Trip	
15:00-15:30	Afternoon Tea	
15:30-17:00	Finish Plant Health Surveillance Field Trip	
17:00	Close of Day Four	Chris Dale

Day Five: Friday 10th June - Surveillance Information Management and Reporting

Time	Event	Remarks
09:00-10:30	Surveillance Programme Information Management	Chris Dale
10:30-11:00	Morning Tea	
11:00-12:30	Surveillance Analysis and Pest Status Determinations	Dr. Ajay Niranjane
12:30-14:00	Lunch	
14:00-15:15	Surveillance Programme Reporting and Communication	Dr. Greg Chandler
15:15-15:30	Afternoon Tea	
15:30-15:45	presentation on Euphresco (EPPO) Workshop conclusion by Secretary of APPPC Close of the workshop	<i>Dr. Baldissera Giovani</i> Dr. Piao Yongfan

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