

Delimiting surveys

Revision history

Version	Date issued	Amendment Details	
		Section(s)	Details
1.0	5 Dec 2013	All	Reformatted from Appendix 10 of PLANTPLAN (V1.0 Nov 2011). Internal references to Appendices in PLANTPLAN removed. Figure 8 removed.
2.0	1 Dec 2015	All	Guideline developed from Delimiting surveys SOP (V1.0 Dec 2013) by the Subcommittee on National Plant Health Surveillance (SNPHS). Approved by SNPHS August 2015. Endorsed by Parties November 2015.

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1. Introduction

The purpose of these guidelines is to assist plant health staff/field officers to plan and conduct delimiting surveillance for suspect Emergency Plant Pests (EPPs). While survey methodology and operating procedures will need to be prepared that are specific to the suspect EPP and host crop, this document provides general information that can be used to inform development of such procedures.

2. Application/Scope

Data collected from surveys will be used to identify the first quarantine zone known as the Restricted Area (RA), which comprises all properties where the organism has been confirmed (Infected Premises (IPs)),

properties which have come into direct or indirect contact with an IP or infected plants (Contact Premises) and properties which may have been exposed to the EPP (Suspect Premises).

The size of the quarantine zone will be determined by a number of factors, including the location of the incursion, the climatic conditions at the time, the biology of the EPP and the proximity of the IP to other IPs.

Trace back and trace forward information will be used to define the RA. A buffer zone or Control Area (CA) is established around RAs to control the movement of susceptible hosts and other regulated materials until the extent of the incursion is determined.

3. Critical Issues

There are a number of critical considerations that must be taken into account when planning and conducting delimiting surveys:

- Delimiting survey methodology should be nationally consistent and allow for the confident identification of the boundaries of an area considered to be infected by or free from an EPP.
- Appropriate record keeping.
- Appropriate containment and labelling of suspect EPP samples collected during the survey and establishment of a chain of evidence (refer to *Collection of suspect Emergency Plant Pests* guidelines and *Chain of Evidence* standard operating procedure).
- Adherence to disinfection and decontamination protocols (refer to *Disinfection and decontamination* guidelines).
- Training of personnel prior to entry to the site.
- Safety of staff is considered at all times and all relevant Work, Health and Safety (WH&S) legislative requirements are followed.
- Availability of resources including personnel and equipment.
- Availability of a National Diagnostic Protocol for accurate diagnosis of the suspect EPP.

4. Resource equipment

Equipment that may be required for a delimiting survey could include, but is not limited to:

- road and farm vehicles
- GPS loggers and/or 'smartphones' running with appropriate software
- radio communication equipment
- sampling and hygiene equipment including laminated guides to assist identification of hosts and symptoms
- hygiene equipment (e.g. disinfection agents – refer to *Disinfection and decontamination* guidelines)
- recording systems
- protective clothing and any other Personal Protective Equipment (PPE), as required.

5. Description of activities

5.1 Delimiting surveys to identify restricted and control areas

5.1.1 Survey design

A survey strategy will be planned with reference to appropriate confidence limits based on the following information:

- pest biology – survival, reproductive rate, spread and dispersal and influence of environmental factors
- host plant – extent of host range, distribution of hosts around RAs and CAs, significance of growth stage of hosts
- survey and sampling methods – ease of symptom recognition, sampling strategy (this should take into account the area of expected occurrence)
- quality of data collected based on numerous factors e.g. credibility of those collecting, ability to collect/inspect representative samples, suitable training and support materials and integrity of the samples collected
- a predictive analysis of areas where the pest is likely to occur
- expected prevalence of the pest if unrestricted
- biometric methods to specify the different confidence limits for targeted and general surveillance.

Note: The above does not represent a definitive list; some surveys may require the sourcing of more information than presented above, while others may require less. Where possible the survey should be nationally consistent and calculation of confidence limits based on best available information. Responsibilities for planning surveys will differ in each jurisdiction and will be dependent on the purpose.

5.1.2 Trace back, trace forward interviews

A questionnaire will be developed to obtain some or all of the following information, depending on the requirements of the pest and the response:

- the details of planting material (such as species, size, numbers, age of plants, material type - potted, cuttings etc and source material), including when and where sourced from
- destinations of plants and plant products which have moved from the property
- location of properties which share equipment and people
- movement pathways of contracted farm labour and of contractors who have recently worked on the property
- access to any records kept by the business or domestic property owner or occupier
- movement pathways of commercial apiarists (if relevant)
- hosts that are present on the property and nearby
- other visitors to the property (including but not limited to friends, family)
- people or equipment (on the property or that have been on the property) that have recently been known to be in contact with the host, or known pest areas elsewhere
- observation of any signs/symptoms of the pest on the property.

5.1.3 Planning and resourcing

A range of tasks will be conducted around planning and resourcing to ensure consistent, effective and appropriate surveillance is conducted, including but not limited to the following:

- Survey teams and leaders will be appointed, and identification tags arranged for these personnel if required, as well as authorities under relevant Acts.
- Training sessions on surveillance programs will be run. This training will include what to look for (signs/symptoms, damage and host identification, including where appropriate, provision of a laminated guide); how to collect, label and pack samples and record sampling points and property visits; WH&S requirements, and communications for consistent messaging.
- Teams will also be trained on relevant jurisdictional plant biosecurity legislation and surveillance officer powers and limitations, introduction statements to property owners and on decontamination practices for entry and exit from properties (refer to *Disinfection and decontamination* guidelines).
- Use of survey equipment will be demonstrated and deployment of teams with vehicles arranged.
- The process for recording time inputs and the cost of consumables will also be explained.
- A Quality Assurance (QA) system will be designed and implemented to check the operation and recording of results by surveillance teams.
- A national diagnostic protocol (if not already developed) will be designed, and laboratories will be recommended for consignment of samples.

The personnel responsible for managing and undertaking these tasks may differ based on the jurisdictions conducting them and the requirements of each response.

5.2 Methods for initial wider surveillance

Surveys will be carried out to check for the presence of the pest outside the RAs and CAs.

5.2.1 Survey design

A nationally consistent survey strategy will be developed that may be based on, but not limited to the following information:

- pathways for movement of the pest
- pest biology – survival, reproductive rate, spread and dispersal and influence of environmental factors
- host plant – extent of host range, national distribution, area, significance of growth stage of hosts linked to climatic zones
- survey and sampling methods – symptom recognition, sampling strategy
- expected prevalence of the pest if unrestricted
- biometric methods to specify the different confidence limits for targeted and general surveillance
- timeframe available and required for surveying.

5.2.2 Planning and resourcing

A consistent surveillance and diagnostic program across production areas in Australia will be developed. Planning and resourcing considerations described in 5.1.3 will also apply to surveys conducted outside the RAs and CAs.

5.2.3 Approval process by Consultative Committee on Emergency Plant Pests

The Consultative Committee on Emergency Plant Pests (CCEPP) will consider/approve the proposed initial national survey (scoping survey), timeframe and proposed budgets from state(s)/territory(s) and incorporate this into a paper for consideration by the National Management Group (NMG).

5.3 Confirmatory surveys to identify the Restricted Area

5.3.1 Survey design

National information from initial surveys and trace back and trace forward interviews will be reviewed, and extended surveys may be planned incorporating:

- nationally agreed survey and sampling protocols and laboratories responsible for diagnosis - these will already have been developed for delimiting surveys
- improvements on the design for the initial survey – incorporating trapping grid for pests which respond to lures
- nationally agreed process for costing surveys and for recording results
- survey rosters, routes and methods of survey for feral hosts on survey route
- a QA system to check the operation and recording of results by surveillance teams.

5.3.2 Establishment of surveillance teams

The number of surveillance teams and resource requirements will be determined. Refer to section 4 for additional information regarding equipment requirements.

Surveillance team leaders and members will be appointed. These teams will be trained in:

- communicating with and dealing with the public, including communication and publicity statements and material to be used/disseminated for awareness for consistent messaging
- the use of equipment (including WH&S issues)
- WH&S in the field
- methods for identifying suspect plants/pests
- methods for sampling from plants, and packaging, labelling and sending samples (refer to *Collection of suspect Emergency Plant Pests* guidelines and *Transport of suspect Emergency Plant Pests* guidelines)
- correct use of data recording tools such as mapping, GPS, data fields, the types of comments to record, and what data fields mean
- decontamination and disinfection protocols for entry and exit from properties (refer to *Disinfection and decontamination* guidelines)
- methods for replacement of lures/traps etc
- survey rosters and end of day operations including delivery of results, samples and any comments
- demonstrate use of survey equipment and arrange for its deployment to teams with vehicles
- use of Powers under relevant Acts
- documentation and administration requirements.

5.4 Confirmatory surveys to identify pest free areas where hosts are not considered to be infected

Once the RAs and CAs have been defined, surveys will be required to identify areas which remain free from the pest. Interstate quarantine regulations may require the affected state(s)/territory(s) to justify area freedom status for unaffected production areas.

International trading partners which identify the pest in their phytosanitary regulations will also normally require justification of pest free areas.

Surveys will usually need to conform to the requirements listed in the International Plant Protection Convention (IPPC) – International Standard Phytosanitary Measure number 4 which specifies that the area must be free of the EPP as demonstrated by scientific evidence.

5.4.1 Design of survey

The Lead Agency (and if required other states/territories) will work with industries through the CCEPP to identify production areas requiring pest free status. The survey design will be consistent with nationally agreed protocols and the Chief Plant Health Manager will seek endorsement of CCEPP prior to commissioning the survey.

Information from the initial survey and trace back/trace forward interviews will also be reviewed to help identify areas for confirmatory pest free area surveys and develop plans for confirming the status based on the following points:

- the definition of the area(s) in question
- detailed maps of the known commercial production areas
- survey methods for locating feral host plants
- agreed confidence limits for detecting the organism
- laminated guides to assist identification of hosts and symptoms
- methods of survey and sampling based on the biology and dispersal of the organism, its predicted unrestricted distribution, host range, and known distribution
- design of trapping grid for pests which respond to lures
- description of survey intensity designed to satisfy agreed confidence standards
- plans for the deployment, management and sampling of sentinel plots or plants
- nationally identified laboratories responsible for diagnosis
- nationally agreed process for costing surveys and for recording results
- QA systems to minimise error.

General surveillance systems that are already in place should be documented as part of this process as these will contribute to evidence of area freedom.

5.4.2 Establishment of surveillance teams

The number of surveillance teams and their resource requirements will be determined. For information regarding equipment requirements refer to section 4.

Surveillance team leaders and members will be appointed. Training will cover the same details as described in section 5.3.2.

5.4.3 Deployment of sentinel plots, plants and lures (if required)

Sentinel plants and lures will be identified and deployed for surveying pest free areas if required. Recommendations will be made for the preferred location of sentinels and lures at agreed sites to optimise detection of the pest.

The purpose of the sentinel program will be identified, the cooperation of property owners will be sought to "host" sentinel plants, and the GPS location of sentinels/lures will be incorporated into the mapping database. An appropriate method will be used to identify sentinel plants and all surveillance teams will be trained in the management and sampling of sentinel plants and in the replacement of lures.

The following property information will need to be collected as a minimum:

- name of property owner (or leasee) and/or name of property manager
- contact details (phone, fax, e-mail) of owner and/or manager
- postal and street address including lot number (if appropriate)
- map and/or GPS reference points
- sketch map of property which identifies area, driveways, paddocks, blocks within paddocks, buildings and geographical features
- details of any linked or shared properties and lease arrangements.

The following information should be recorded on survey forms:

- date (day/month/year)
- block number within paddock (as identified on property map)
- estimated area of the block
- survey protocol (e.g. x plants within y row)
- variety, growth stage and special methods of production.

The following information should be recorded on labels of samples taken during a survey:

- date (day/month/year)
- identifying number which is linked to a number on the survey form
- host and variety
- GPS location
- name/position of person collecting the sample.

6. Appendices

Appendix 1 Property survey form

LOCATION AND PROPERTY DETAIL

District: _____

Survey round: _____

Property ID: _____

Plantation/block ID: _____

Address (lot number): _____

Owner/manager: _____

Business name: _____

Telephone: _____

Fax: _____

E-mail: _____

Access comments: _____

SURVEY RECORD

Variety/crop: _____

Developmental stage: _____

Row and sampling plan: _____

Area to be sampled: _____

Arrival time: _____

Departure time: _____

Block ID and size	Row number	Number of plants in the row	Number of plants with symptoms present	Location of affected plant	Sample taken and identifier

Diagram of block in relation to position on farm and estimated distribution of pest incidence and severity

Name and signature of property owner/manager _____ Date _____

Name and signature of surveyor _____ Date _____

Appendix 2 Minimum data standards

To be inserted

Appendix 3 Terms and definitions

Term	Definition	Definition source
Contact Premises	Premises (or locality) containing susceptible host plants which are known to have been in direct or indirect contact with an Infected Premises.	PLANTPLAN
Control Area	An area around the restricted area where movement is controlled but not restricted. The area is intended to reduce likelihood of the Plant Pest spreading beyond the Restricted Area.	PLANTPLAN
Infected Premises	Premises (or locality) at which an EPP is confirmed or believed to exist.	PLANTPLAN
Pest Free Area	An area which a specific pest is known not to occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained.	PLANTPLAN
Restricted Area	A relatively small area (compared to a Control Area) around an Infected Premises that is subject to intense surveillance and movement controls. <i>Note: Movement out of the area will, in general, be prohibited, while movement into the area would only be by permit. Multiple Restricted Areas may exist within one Control Area.</i>	PLANTPLAN
Suspect Premises	Premises (or locality) containing plants which may have been exposed to an EPP and which will be subject to quarantine and intense surveillance.	PLANTPLAN