

Diagnosis of suspect Emergency Plant Pests

Document revision history

Version	Date issued	Amendment details	
		Section(s)	Details
1.0	5 Dec 2013	All	Reformatted from Appendix 3 of PLANTPLAN (V1 Nov 2011). Original document separated into two SOPs. Internal references to Appendices in PLANTPLAN removed. "Purpose" added.
2.0	17 Dec 2014	All	Guideline developed from SOP (V1 Dec 2013) by the Subcommittee on Plant Health Diagnostic Standards (SPHDS). Approved by SPHDS October 2014. Endorsed by Parties November 2014.

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1. Introduction

The purpose of these guidelines is to provide a framework for diagnosticians to follow when receiving samples of suspect Emergency Plant Pests (EPP) for diagnosis. In all cases the laboratory standard operating procedures (SOP's) should be followed where applicable.

2. Critical issues

Correct identification is central to effective control of pests and diseases and for the detection of new EPPs. Initial identification should have the highest priority and follow (in order of precedence):

- IPPC protocols
- National Diagnostic Protocols
- Peer reviewed published procedures
- Best practise diagnostic techniques.

Chain of evidence protocols shall be followed at all times (see *Chain of evidence SOP*). The appropriate quarantine containment must be used for the sample being examined.

3. Initial diagnosis of suspect EPPs

Initial examination will be carried out by an experienced general diagnostician (e.g. pathologist/entomologist) within the agricultural department in the state/territory in which the sample was obtained. Once an initial examination has been undertaken a specialist may be engaged to carry out further diagnosis. A confirmatory diagnosis will also be undertaken by another laboratory.

3.1 Examination of symptoms by Lead Agency Diagnostic Laboratory

- Check the condition of the plant/pest to determine if it is suitable for testing. New samples should be requested immediately if the submitted sample is not suitable for testing.
- Note and record the integrity of the sample on the sample submission form.
- Digital images of symptoms and other features should be recorded.
- When initial examination indicates a high likelihood of an EPP, the sample and all digital and physical evidence (e.g. slides, DNA etc) will be kept appropriately labelled and securely stored following chain of evidence protocols (see *Chain of evidence SOP*).
- The diagnostician will observe decontamination protocols (e.g. remove laboratory coat for sterilisation, wash hands, disinfect instruments and area – see *Disinfection and decontamination guidelines*).

3.2 Initial diagnosis by specialist

- The Lead Agency will organise additional samples for testing, if required.
- Diagnosis should be carried out within a quarantine containment facility, consistent with the requirements of the pest being examined.
- Initial conclusion on diagnosis and test results should be conveyed to the submitting Diagnostic Laboratory and CPHM of the Lead Agency and only to them.
- Once diagnosis has been completed the sample should be appropriately labelled and securely stored.
- The specialist should preserve and record all digital and physical evidence (e.g. slides, DNA etc.) which supports the initial diagnosis, ensuring it is appropriately labelled and securely stored.
- The specialist will observe decontamination protocols.

3.3 Confirming diagnosis

- The Consultative Committee on Emergency Plant Pests (CCEPP) will select a second national laboratory with the expertise for independent confirmation of the result. The CCEPP will ensure the laboratory has the appropriate quarantine containment.
- The sample will be forwarded under strict quarantine conditions with the appropriate Movement Permits from the Lead Agency CPHM to the diagnostician with an explanatory letter, observing packaging and transport guidelines (see *Transport of suspect Emergency Plant Pests guidelines*).
- In the event that a second national laboratory cannot be located, the CCEPP may identify the requirement for an overseas expert to assist with diagnosis. Note: Selection criteria should cover availability, ease of communication and industry links.

- The Lead Agency CPHM will engage the overseas expert and confirm all arrangements for consignment of samples (e.g. paperwork required, special quarantine requirements of the importing country, payments, international courier arrangements), preferred diagnostic tests for isolation and identification of the target pest, and confidential reporting of results.
- The Lead Agency CPHM will notify the Australian Chief Plant Protection Office (ACPPPO) of the proposed movement of samples and manage any internal and international movement permits and other legislative requirements.
- The Lead Agency CPHM will negotiate any financial transaction(s) for the proposed work and confirm a pathway for confidential reporting of results.

4 Surveillance diagnosis

Samples collected from surveys will need to be tested to confirm presence of the pest. Diagnostic procedures/protocols contained in contingency plans, response plans or surveillance plans for the specific pest should be followed if available.

In the absence of predetermined plans, the CPHM will liaise with the specialist to design guides for diagnosis of samples from surveys for other diagnosticians that will be processing samples. The guides may include:

- validated tests (with quick turnaround time) for isolation of pathogen
- a standardised recording system for results of each sample
- a quality assurance (QA) system for checking veracity of results.

4.1 Training diagnosticians and technical staff

A specialist technical working group may be required to plan and implement training protocols for diagnostic labs covering:

- methods of selecting samples to maximise detection of the pest
- the selected tests for identification of the pest
- methods of recording information relating to a case and chain of evidence requirements.

5. References

Diagnostic protocols for some EPPs can be found on the web:

- IPPC protocols: <https://www.ippc.int/core-activities/standards-setting/ispms>
- National Diagnostic protocols: <http://plantbiosecuritydiagnostics.net.au/resource-hub/protocols/national-diagnostic-protocols/>
- EPPO protocols: published in EPPO Bulletin: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1365-2338](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1365-2338)