Food and Agriculture Organization of the United Nations

International Plant Protection Convention
Protecting the world's plant resources from pests

An Introduction for Authors of IPPC Diagnostic Protocols

INTERNATIONAL PLANT PROTECTION CONVENTION SECRETARIAT

2015

ENG

The International Plant Protection Convention (IPPC)

Mission

To secure cooperation among nations in protecting global plant resources from the spread and introduction of pests of plants, in order to preserve food security, biodiversity and to facilitate trade.

Strategic objectives for 2012-2019 are to:

A Protect **sustainable agriculture** and enhance global **food security** through the prevention of pest spread;

B Protect the **environment**, **forests** and **biodiversity** from plant pests;

C Facilitate economic and **trade development** through the promotion of harmonized scientifically based phytosanitary measures; and

D Develop **phytosanitary capacity** for members to accomplish A, B and C.

Organizational structure and function

The Commission on Phytosanitary Measures (CPM) is the IPPC's governing body.

Diagnostic Protocols (DPs) drafting groups

- DPs are developed by a DP drafting group made up of a lead author and co-authors
- Each DP drafting group is led by a TPDP member (discipline lead)
- DP drafting groups work through e-mail discussions

Technical Panel on Diagnostic Protocols (TPDP)

The TPDP is a sub-committee of the SC and is responsible for:

- Developing DPs within the framework of International Standard for Phytosanitary Measures (ISPM) 27. *Diagnostic protocols for regulated pests*
- Developing guidance on related issues
- Providing guidance and oversight to the work of DP drafting groups
- Selecting authors for the DP drafting groups

Standards Committee (SC)

The SC is a subsidiary body of the CPM and is responsible for:

- Overseeing the IPPC Standard Setting Process
- Managing the development of ISPMs
- Providing guidance and oversight to the work of Technical Panels (TP) and Expert Working Groups (EWG)
- Selecting TP and EWG members
- Adopting DPs on behalf of CPM

Diagnostic Protocol Drafting Groups

This is a long process

It takes 4-5 years from development to adoption.

Different input at different times

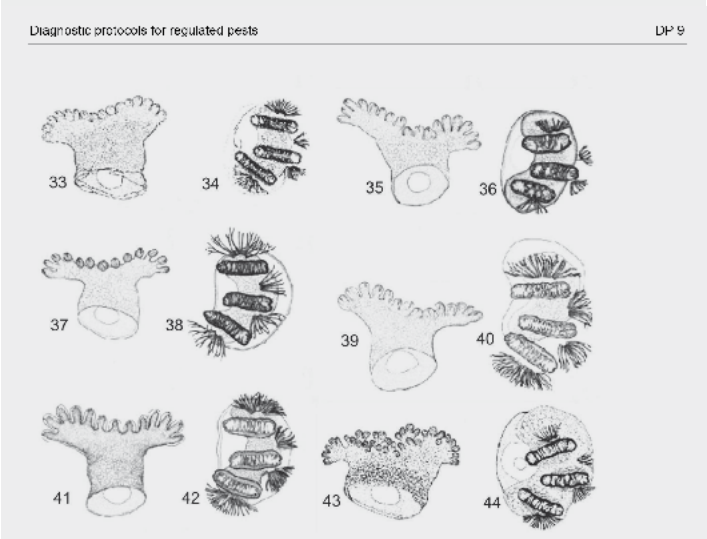
Input, comments, and revisions to the draft DP are needed at several stages of the development.

A globally harmonized protocol

DPs are not scientific publications but adopted international standards to which IPPC contracting parties have agreed.

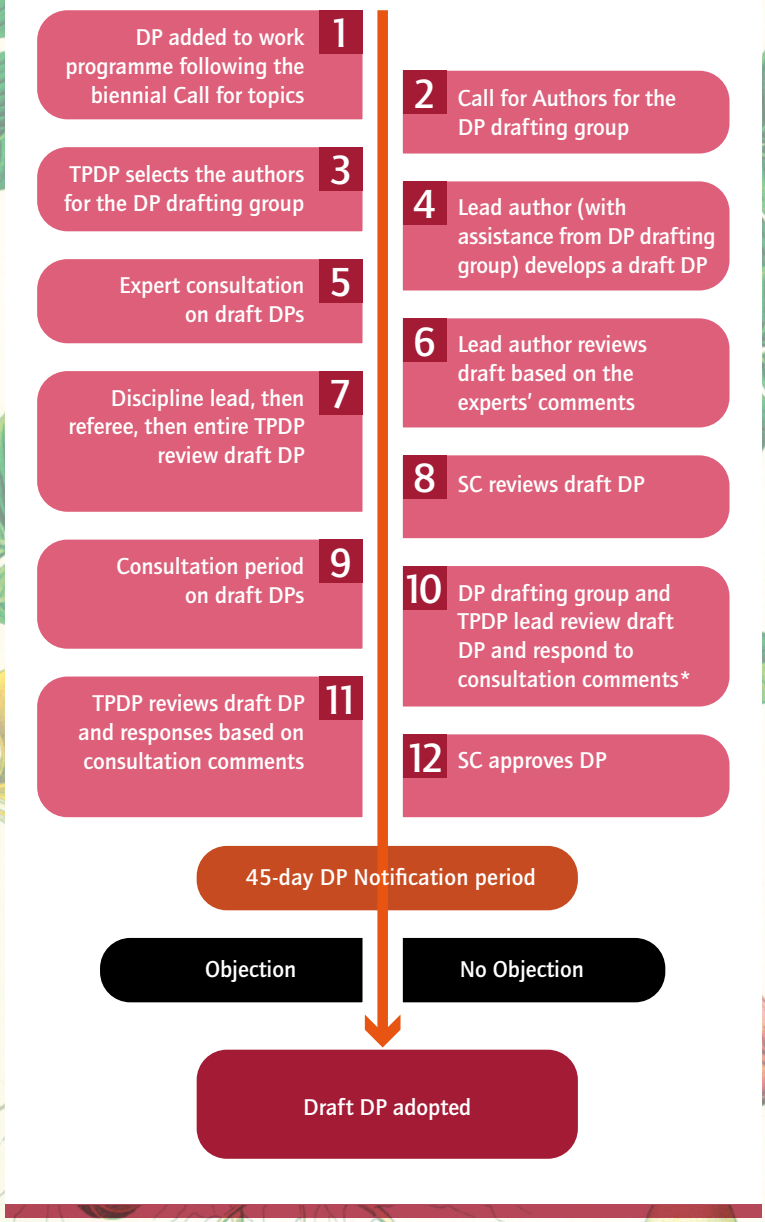
It will be helpful to have the following documents available to you during development of the DP:

- ISPM 27. *Diagnostic protocols for regulated pests*
- Instruction to authors of diagnostics protocols
- TPDP working procedures
- IPPC Procedure Manual for Standard Setting, including checklist for authors
- IPPC Style guide



Detail of DP 9, ISPM 27. Anterior and posterior spiracles of third instar larvae of Anastrepha species: (33, 34) A. ludens; (35, 36) A. serpentina; (37, 38) A. obliqua; (39, 40) A. striata; (41, 42) A. suspensa; and (43, 44) A. grandis.
Source: All figures adapted from Carroll et al. (2004).

How Standard Setting works for DPs



*The DP is edited at various stages, which requires additional reviews by the DP drafting group.

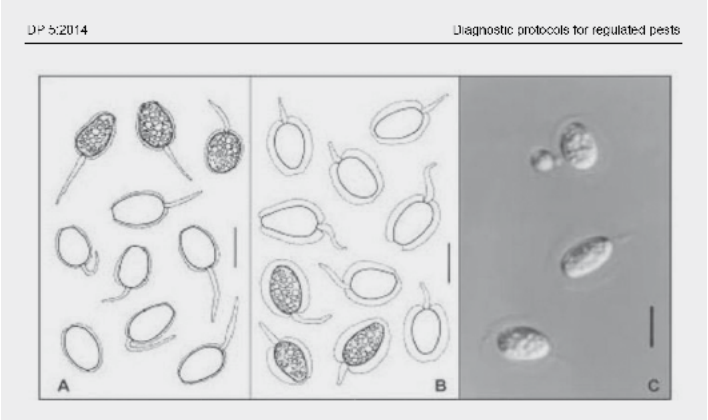
Diagnostic Protocols

General principles

- DPs provide the minimum requirements for reliable diagnosis of regulated pests.
- The methods are selected on the basis of their sensitivity, specificity and reproducibility.
- Availability of equipment, the expertise required for these methods and their practicability are also taken into account.
- Harmonization requires compromise.

International standards

- The IPPC sets standards to reduce the spread and introduction of pests of plants. This is important to ensure safe and fair international trade.
- DPs that are adopted as annexes to ISPM 27. *Diagnostic protocols for regulated pests* are considered international standards.
- The World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) recognizes that phytosanitary measures which conform to the international standards developed under the IPPC as necessary to protect plant health.



Detail of DP 5, ISPM 27. Conidial morphology and cultural characteristics of Phyllosticta citricarpa and Phyllosticta capitalensis: (A) conidia of P. citricarpa with thin (<1.5 µm) mucoid sheath; (B, C) conidia of P. capitalensis with thick (>1.5 µm) mucoid sheath (scale bar = 10 µm) (photo C was taken under a light microscope equipped with differential interference contrast). Photos courtesy G. Verkley, Centraalbureau voor Schimmelcultures, Utrecht, the Netherlands (A, B, C).

Case Study: Citrus Canker in Solomon Islands

How a Diagnostic Protocol saved the day!

Citrus canker was detected for the first time in the Solomon Islands in 2010 through surveys by the Australian Department of Agriculture and Biosecurity Solomon Islands. Due to Australian plant health import requirements, only infected citrus material that had been deactivated could be returned to Australia and tested using PCR-based tests.

The PCR tests returned positive results and a draft disease note was submitted for publication. However, the journal would not publish these results due to the requirement to isolate a pure culture, deposit into a recognised culture collection, and conduct pathogenicity tests to verify Koch's postulates. Biosecurity Solomon Islands were keen to have this record published to help support the integrity of their phytosanitary system in terms of surveillance and pest reporting.

In collaboration with the Australian Department of Agriculture and Biosecurity Solomon Islands, the infected citrus material was imported into laboratories (Physical Containment Level 2) in New Zealand. While this laboratory had worked with many xanthomonad pathogens, they had not previously isolated *Xanthomonas citri* subsp. *citri* (Xcc) from infected plant material. By following the IPPC DP 6 that outlined methods for isolation, identification and pathogenicity, they were able to isolate the bacterium, validate the identification using biochemical and molecular tests, conduct pathogenicity testing and fulfil the requirements of Koch's postulates.

Xcc was particularly difficult to isolate from these samples due to culture plates being overcrowded by competing saprophytic bacteria and first attempts using standard bacteriological media was not successful. A second attempt at isolation, using the methods and advice in the DP 6 on how to overcome this issue, resulted in the successful isolation of Xcc. They were then able to conduct pathogenicity tests using detached leaf assays (also described in the DP 6) in containment.

The results from this lead to the disease note been accepted for publication: *First record of citrus canker, caused by* Xanthomonas citri *subsp.* citri *in Solomon Islands.* R. I. Davis & R. K. Taylor & D. Rouse & M. Flack & D. Hailstones & L. M. Jones & J. B. Rossel & C. Fanai & F. Tsatsia & H. Tsatsia. Journal: Australasian Plant Dis. Notes (2015) 10:9

Need further information?

IPPC Secretariat email addresses

- Adriana G. Moreira (Standards Officer – Secretariat Lead for TPDP): Adriana.Moreira@fao.org
- Brent Larson (Senior Standards Officer): Brent.Larson@fao.org
- General IPPC email: ippc@fao.org

Internet

- TPDP membership list
- International Phytosanitary Portal
- IPP public page for the Technical Panel on Diagnostic Protocols (TPDP)
- IPPC Official Contact Points
- IPPC adopted standards (including DPs)

Social Media

- @ippcnews
- facebook.com/ippcheadlines/
- linkedin.com/groups/3175642

International Plant Protection Convention (IPPC)
Viale delle Terme di Caracalla, 00153 Rome, Italy
Tel: +39 06 5705 4812 - Fax: +39 06 5705 4819
Email: ippc@fao.org - Web: www.ippc.int