Strategic issues associated with pest diagnosis

Discussion paper from the European Union

1. Background

1. In 2016, CPM-11 adopted a CPM Recommendation on the Importance of Pest Diagnosis. This stresses the importance of pest diagnosis in underpinning many activities involved in implementing the International Plant Protection Convention (IPPC).
2. The Recommendation encourages Contracting Parties (CPs) to support laboratory capacity, share knowledge, expertise and diagnostic protocols (DPs). CPs are encouraged to participate in the development of DPs under the IPPC standard setting process. The Recommendation also encourages Regional Plant Protection Organisations (RPPOs) to support the development of DPs and laboratory procedures, share knowledge and work to enhance capacity within their region.
3. The EU fully supports this Recommendation and the capacity development initiatives of the IPPC Secretariat such as the development of the Plant Diagnostics Manual[[1]](#footnote-1). There remain, however, some strategic issues associated with pest diagnosis that should be considered further by the CPM. Pest diagnosis should be integral to all aspects of the IPPC work programme.
4. During the member consultation of the draft CPM Recommendation some countries highlighted that several general/strategic issues would be more appropriately covered in CPM decisions than by inclusion in the Recommendation, so they were removed. Some additional suggestions were also made, which should not be forgotten. These issues relate to the following aspects:
5. ensuring accessibility of DPs and diagnostic support;
6. the role of international standardization or other harmonization to improve the acceptability of diagnostic services
7. whether/how to include pest diagnosis as a future IPPC Implementation Programme.

2. Ensuring accessibility of DPs and diagnostic support

1. In relation to accessibility of DPs, the CPM has adopted 17 DPs and 17 are under development. RPPOs have developed regional standards for pest diagnosis; EPPO has more than 100 standards relevant to the European region. Additional DPs and other resources contributed by NPPOs are posted on the phytosanitary resources pages[[2]](#footnote-2). All CPs are encouraged to submit relevant material for inclusion on the phytosanitary resources pages.
2. As these protocols are available electronically, the main issue regarding accessibility of DPs relate to the coverage and status of DPs. Are more DPs needed by NPPOs and do we need to have harmonised IPPC DPs?

2.1 Need for more IPPC DPs?

1. IPPC DPs should reflect the most important priorities for CPs. The Implementation Review and Support System (IRSS) survey on ISPM 19 (*Guidelines on lists* *of regulated pests*) and ISPM 17 (*Pest Reporting*)[[3]](#footnote-3) posed the question “*Which are the five pests on your regulated pest list which are the most concern?*” Forty-two countries responded to the survey and indicated the regulated pest of most concern to their country. In 2014, in a comparison of the findings of this survey with the list of pests for development of DPs on the List of Topics for Standards, results demonstrated that 58% of the regulated pests of major concern were already subjects on the Technical Panel on Diagnostic Protocols (TPDP) work programme[[4]](#footnote-4). Hence it was apparent that many pests on the TPDP work programme were for pests of major concern to contracting parties.
2. It should be noted, however, that there are inherent issues in creating such lists, for example: not all CPs responded to the questionnaire; importance may change rapidly as new pests occur; there is no information on the status of these pests; and CPs were not asked to provide the five pests for which DPs are required.
3. In the IRSS study, several pests were listed by more than one region and four were listed by three regions (*Ralstonia solanacearum*, *Ceratitis capitata*, *Globodera rostochiensis* and *G. pallida*). *Ceratitis* spp. was added by the SC to the List of Topics for Standards in May 2016. National and regional DPs already exist for the other three pests; do we need IPPC DPs for them?
4. There are also many high profile pests causing problems or spreading globally, e.g. *Fusarium oxysporum* f.sp. *cubense* tropical race 4, *Mycosphaerella fujiensis*, *Microcyclus ulei*, *Phytophthora* spp. Effective and rapid diagnostic methods could help prevent further spread of pests in planting material or on plant products.
5. There could also be benefits in the creation of expert drafting groups to take forward DPs (or protocols based on the extent of current knowledge) for pests where the taxonomy is complex or still needs to be resolved.
6. If it is considered important to make available more DPs, CPs can propose new topics during the biennial call for topics. None have been considered by the SC recently. It is not clear whether CPs see a need for new DPs or whether development of DPs through the IPPC process is seen to be relevant. A questionnaire might help answer these questions (see section 2.2 below).
7. One strategy regarding pest diagnosis might be to make sure that all pests referred to in IPPC activities have a DP associated with them. For example, CPM-11 (2016) discussed starting limited activities under the pilot implementation programme on surveillance using three high profile example pests/pest groups (*Xylella fastidiosa*, *Bactrocera invadens* (*B. dorsalis*) and invasive ants). DPs are already being developed for the first two and Australia has keys for the relevant ant species, but should they be covered by an IPPC DP?
8. Another reason for developing IPPC DPs could be to prevent disputes. However, evidence of disputes being caused by differences in opinion over diagnostic methods would be needed.

2.2 Survey of the use of DPs and priorities for future development

1. Due to resources in the Secretariat, it is important to finish the development of DPs on the work programme before considering undertaking other work related to pest diagnosis. In order to find out CPs views regarding DPs and diagnosis issues, we suggest that it would be appropriate to undertake a survey of the use of DPs and priorities for future development. This could include, for example, whether more harmonization of DPs is needed and views on the process for their development. The survey should take place once sufficient DPs have been adopted and used.
2. The SC considered a questionnaire in 2014, but there were too few adopted DPs. The draft questionnaire could be revised and issued. Regional workshops could be a way of canvassing whether a questionnaire would be useful or to get views of RPPOs and NPPOs.

2.3 Make available lists of diagnosticians and diagnostic services on the IPP

1. One aspect relating to accessibility of diagnostic support is the availability of resources in countries to support pest diagnostic activities. Another could be the provision of guidance for CPs on where to go to get expert support.
2. In this regard, it might be appropriate to make available on the IPP lists of diagnosticians or official diagnostic laboratories that offer services. This was proposed during member consultation on the draft CPM Recommendation. EPPO has developed a database on diagnostic expertise (<http://dc.eppo.int/>), which is a valuable tool for laboratories and NPPOs in the region. Other RPPOs might consider creating similar lists for their region.
3. For global coverage, the phytosanitary resources pages already provide a place where experts can post their expertise. However, in order to provide a useful resource on pest diagnostics, more focussed and relevant information would be needed, including information on levels of expertise, methodologies, certification or accreditation and diagnostic service. Other information, such as availability for exchanges or training and ability to confirm first findings of new pests by an experienced laboratory are important examples of diagnostic support that might be listed. However, a problem with generating lists of diagnosticians or laboratories is how to verify the competence of operators and keeping such lists up to date.
4. The CPM Recommendation encourages CPs to pool resources with other NPPOs to ensure sufficient diagnostic capacity and capability is in place to meet future demand. This could involve establishment of centres of expertise, which was suggested in country consultation on the Recommendation.

3. International standardization or other harmonization to improve the acceptability of and confidence in diagnostic services

1. A strategic aspect of pest diagnosis is the need to improve the acceptability of and confidence in diagnostic services and results obtained from them. The EU previously proposed an ISPM on minimum requirements for official laboratories, but many have pointed out that there is no need for this because many official laboratories comply with existing quality assurance systems e.g. ISO. However, not all laboratories comply and mechanisms to help increase diagnostic capacity should be encouraged. It is important to note that CPM-8 (2013) agreed that ISO standards are not mandatory for implementation of ISPMs and that in the phytosanitary area, ISPMs take precedence over ISO standards.
2. The recently published Plant Diagnostic Manual covers many aspects of operation of an official diagnostic laboratory. In addition, other groups provide guidance on horizontal issues associated with aspects of molecular diagnosis (e.g. ISF).

4. Pest diagnosis as a future implementation programme

1. A proposal in the draft CPM Recommendation was that it might be appropriate to consider a pilot implementation programme on pest diagnosis. This was to raise the profile of pest diagnosis in the IPPC, which is crucial to prevent the spread and introduction of plant pests. This may also help to ensure collaborative and joint work within the different units in the Secretariat.
2. Pest diagnosis underpins all aspects of phytosanitary activity. This should be recognised in all implementation activity and whereas a specific programme on pest diagnosis may not be necessary, it may be appropriate for the CPM to make a decision regarding accessibility of diagnostic methods relevant to all IPPC activities.
3. Improvement in capacity of NPPOs to undertake diagnostic techniques is one aspect of an implementation programme. The continued development of accurate, cost effective methods that can be undertaken by all should be a priority. It should be recalled that many CPs commented during the IRSS survey for ISPM 19 and ISPM 17 on their challenges with capacity and facilities for pest diagnosis and the need for improvement. This issue could be linked to the development of centres of expertise and centres of diagnosis. For animal pests, FAO has identified 18 technical areas in animal health for which Reference Centres are required.
4. In addition to capacity, there are several specific implementation issues that may become increasingly important in trade, particularly with the increased use of molecular diagnostic techniques. The TPDP is providing guidance on requirements that authors of DPs should take into account when including methods in new DPs. However, guidance relevant to the use of methods is also needed. Examples of potential future implementation issues relate to the use of:

* ‘indirect tests’, interpretation of tests where there is evidence of pest presence, but no indication of pest viability
* next generation sequencing, interpretation of results in order to be sure that a pest is present
* barcoding, determining the extent of similarity or difference between type or voucher specimens and test material required for a positive.

5. Conclusions

1. The SPG may wish to:
2. *consider* whether to recommend further actions to CPM to enhance the accessibility of DPs and diagnostic services, for example by:

* *proposing* that the CPM agrees that all pests covered by IPPC activities (e.g. ISPMs, implementation programmes) should have methods available so they can be diagnosed with confidence by CPs
* *recommending* to the Standards Committee (SC) or IRSS to issue a questionnaire on coverage and use of IPPC DPs
* *recommending* that the SC considers developing a strategy for further development of IPPC DPs
* *proposing* that the Secretariat creates a list of diagnosticians and diagnostic labs on the IPP/phytosanitary resources pages.

1. *consider* whether there is a need for any further harmonisation in order to increase the acceptability of diagnostic services and the confidence in results generated by them.
2. *consider* requesting CPM to consider the issue of pest diagnosis as a priority for an implementation programme and develop a strategy and work plan for this.

1. <http://www.phytosanitary.info/sites/phytosanitary.info/files/Diagnostics_manual_English_1.1.pdf> [↑](#footnote-ref-1)
2. <http://www.phytosanitary.info/contributed-resources> [↑](#footnote-ref-2)
3. <https://www.ippc.int/largefiles/2014/Survey-Analysis-NPPOs-17-19.pdf> [↑](#footnote-ref-3)
4. Para 166 of <https://www.ippc.int/static/media/files/publications/en/2014/09/08/report_2014_tpdp_july_2014-09-08.pdf> [↑](#footnote-ref-4)