

REPORT

Rome,
Italy,
25-29 April
2005

**Standards
Committee
Sixth meeting**

**Meeting Report
AGP/2005**

**REPORT OF THE SIXTH MEETING OF THE
STANDARDS COMMITTEE**

Rome, Italy: 25-29 April, 2005



**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2005**

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CONTENTS

Report of the sixth meeting of the Standards Committee.....	1
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APPENDICES

Appendix 1	Revised agenda.....	15
Appendix 2	Stewards for topics for standards and draft standards	17
Appendix 3	Specification No. 17 (1 st revision).....	18
Appendix 4	Specification for Technical Panels No. 4 - Rev. 1	19
Appendix 5	Specification No. 30.....	20
Appendix 6	Specification for Technical Panels No. 3 - Rev. 1	22
Appendix 7	<i>Draft ISPM: Guidelines for consignments in transit.....</i>	23
Appendix 8	<i>Draft ISPM: Principles for the protection of plant health</i>	31
Appendix 9	<i>Draft ISPM: Diagnostic protocols for regulated pests</i>	41
Appendix 10	<i>Draft ISPM: Requirements for the submission of phytosanitary treatments.....</i>	51
Appendix 11	<i>Draft ISPM: Requirements for the establishment and maintenance of pest free areas for Tephritid fruit flies.....</i>	61
Appendix 12	<i>Proposed revision to the methyl bromide fumigation schedule of Annex I of ISPM No. 15 (Guidelines for regulating wood packaging material in international trade).....</i>	90
Appendix 13	Participants list.....	91

1. OPENING OF THE MEETING

Mr van der Graaff welcomed the participants to the SC and opened the meeting. He reported that all the standards recommended by the SC for adoption by had been adopted at ICPM-7. He stressed that with the increasing number of standards being brought forward for consideration, it would not be possible for the SC to do detailed re-drafting as in previous years and called for innovative ways of working. He also recommended that if drafts required considerable re-drafting, that they should be sent back to the relevant expert working group (EWG) for further consideration. He thanked the members of the SC for their hard work throughout the year and thanked their governments for their support.

Mr Vereecke was confirmed as chair of the SC and Mr Ribeiro e Silva as vice-chair.

2. ADOPTION OF THE AGENDA

The provisional agenda was revised and adopted and shown in Appendix 1.

The SC recommended that documents for future meetings should be numbered similar to ICPM documents. This was agreed by the Secretariat.

3. ADOPTION OF THE REPORT OF THE FIFTH MEETING OF THE STANDARDS COMMITTEE

The Secretariat reported that the draft report had been amended to take into account the comments received from SC members. The SC noted that Specification No. 15 on systems approaches for citrus canker had been modified at the last meeting.

The SC approved the report.

4. STATUS OF ISPMS UNDER DEVELOPMENT AND REPORTS FROM STEWARDS

The Secretariat had provided ICPM-7 with a document named "Standard Setting in the ICPM Work Programme (Strategic Direction no 1); Status Report on Draft Standards and Specifications for Standards". The ICPM had asked that such a document be provided for each Commission meeting. The Chairman congratulated the Secretariat on producing the document, which would further increase transparency in the standard-setting process.

The stewards updated the SC on the progress with the development of standards and on the work of the Technical Panels since the last meeting. The SC discussed the following topics:

Administrative guidelines for the structure of standard-setting

Mr Klag reminded the SC that he had been asked to revise the draft administrative guidelines at the last meeting. In particular he had been asked to change it from an ISPM-format to general guidelines and also to take into account the comments of the SC. This will be discussed in more detail under agenda item 10.

Research protocols for phytosanitary measures (treatments)

Mr Klag reported that Specification No. 22 (Research protocols for phytosanitary measures (treatments)) had been considered by the Technical Panel on Phytosanitary Treatments (TPPT) at their meeting in December 2004 and had combined a task in the TPPT's specification to produce a draft standard for consideration by the SC at this meeting, which addressed the requirements for submission of phytosanitary treatments covered in the Specification.

Alternatives to methyl bromide

Mr Klag informed the SC that the EWG on alternatives to methyl bromide had been scheduled to meet in the week after the TPPT meeting in December 2004 so that certain members of the TPPT could be included. However, due to difficulties in arranging flights, the meeting was postponed. The TPPT had discussed the issue and had proposed devoting one day to the topic at their next meeting. The

Secretariat pointed out that ICPM-7 had expressed continued concern on this issue and informed the SC that the Secretariat was considering holding an EWG meeting on the topic.

Classification of commodities by phytosanitary risk related to level of processing and intended use

Mr Quiroga reported that the EWG had met in Buenos Aires in February 2005 and a draft standard had been produced. He was awaiting final agreement between the experts in relation to an annex to the draft, but he hoped that the draft standard would be ready for consideration by the SC at its meeting in May 2006.

Systems approaches for citrus canker

Mr Ribeiro e Silva reported that the EWG had met twice. At the first meeting, levels of infection in the field had been discussed and the EWG had identified that more work was needed on the ability of packing houses to eliminate fruit with symptoms. At the second meeting the EWG had considered discussion documents from Argentina and Uruguay on eliminating fruit with symptoms. However, the EWG had identified a further issue, latent infection, which should be resolved before completion of the ISPM, but had not been able to resolve this issue. Mr Ribeiro e Silva hoped that it could be resolved by email correspondence, but he recommended holding a further meeting to complete the task.

The SC considered that it was important to complete work on this standard, but the Secretariat pointed out that a further meeting on this topic would affect the work programme for 2006 and prevent an EWG meeting planned on a new topic.

Areas of low pest prevalence for fruit flies

Ms Gonzalez reported that at the recommendation of the TPDF, a consultant had been hired by the Secretariat to produce a draft ISPM. An EWG had been scheduled for May 2005 in Vienna to coincide with a meeting on fruit flies hosted by IAEA. However, this meeting had been postponed and the draft standard will now be considered by the technical panel on pest free areas and systems approaches for fruit flies (TPDF) at its next meeting in Costa Rica in September 2005.

Systems approaches for fruit flies

Mr Holtzhausen reported that the consultant hired to work on the Areas of low pest prevalence for fruit flies had also prepared a discussion document on systems approaches for fruit flies, which will also be considered by the TPDF at its next meeting.

Electronic certification

The SC noted that, as a result of ICPM-7, this issue would not be dealt with by the normal standard-setting process and this topic has now been removed from the standard setting programme.

Surveillance for citrus canker

The SC noted that the development of this ISPM was "on hold" until after the development of a standard on systems approaches for citrus canker was completed. The SC decided to have an SC member as the Steward for this standard and replaced Lawrence Brown with Michael Anthony Holtzhausen.

Technical panel on diagnostic protocols (TPDP)

Mr Unger reported that the Secretariat had sought nominations from NPPOs for experts to draft diagnostic protocols on the pests identified by the TPDP. The expert members of the TPDP had evaluated these nominations and recommended experts to write and edit the protocols. These recommendations had been agreed by the whole panel and were presented to the SC for information.

Nominations for the expert member of the panel on nematology had also been received and the SC had approved membership of Ms. Esther van den Berg (South Africa) as the TPDP-nematologist. TPDP members for mycology and botany have not been filled and nominations would again be requested by the Secretariat.

Technical panel on phytosanitary treatments (TPPT)

Mr Klag reported that the TPPT had met in December 2004 and had produced a draft standard on the submission and evaluation of phytosanitary treatments for consideration by the SC at this meeting. The TPPT had proposed that treatments adopted by the ICPM should be published as annexes to an ISPM (“the Register of Phytosanitary Treatments”) and the TPPT intended to work on this draft ISPM at its next meeting in August 2005. In addition, the TPPT had recommended producing a web-based database of all phytosanitary treatments to be hosted on the IPP. It was intended that this would include treatments currently used by NPPOs. Treatments adopted by the ICPM would also be included but separately identified to distinguish them from NPPO treatments.

In order to determine priorities for development of international phytosanitary treatments, the TPPT had designed a submission form for priorities for treatments. This had been distributed at ICPM-7 and would be sent to NPPOs and RPPOs by the Secretariat for completion by 30th June. The TPPT would then consider the priorities at its next meeting and report back to the SC.

The TPPT had drafted a procedure for production of phytosanitary treatments (Annex 1 of the Report of the TPPT meeting 2004-12-13), which described the process for development of an international treatment. It was envisaged that the evaluation of treatment data would either be done by the TPPT or by an expert group nominated by the TPPT.

As the priorities for treatments were to be determined at the next meeting, TPPT members had agreed to produce dossiers of treatment information for fruit flies, based on their own experience and based on the requirements in the draft ISPM on submission of treatments. The TPPT would consider these dossiers at its next meeting and this would allow to check whether the procedure proposed for submission and evaluation of treatments was appropriate.

The TPPT reviewed their membership and would like to invite all selected members who were unable to attend the first meeting to the next meeting. The TPPT also agreed that the USDA treatment manual was the most widely available treatment manual and because of this suggested that Scott Wood from the US (host at last meeting) be invited to join the panel as a member. The SC agreed to this proposal.

Technical panel on forest quarantine (TPFQ)

The Secretariat reported that the TPFQ had met in Canada in March 2005 immediately after the meeting of the International Forest Quarantine Research Group (IFQRG) and the IPPC Workshop on implementation of ISPM No. 15. Taking into account the outcomes of these two meetings, the TPFQ recommended revision of ISPM No. 15 to clarify the issues that had caused problems for NPPOs when trying to implement the standard. However, the Secretariat explained that ICPM-7 had not added the revision of ISPM No. 15 to the standard setting work programme. The TPFQ proposed that some of the difficulties with the text could be clarified by an explanatory document, which Mr Sela (Canada) agreed to produce. The TPFQ recommended a modification to the methyl bromide schedule in Annex 1 of ISPM No. 15, which the SC considered during the meeting (see Section 9.8 of this Report), and which had been identified by ICPM-7 as suitable for the fast-track process.

The TPFQ had also reviewed the procedures for development of phytosanitary treatments that had been developed by the TPPT. It had proposed that the two technical panels should work together, with the TPPT responsible for evaluating the efficacy of all treatments and the TPFQ responsible for determining whether treatments proposed for ISPM No. 15 were appropriate for inclusion in that standard. They had agreed to work on criteria for inclusion of treatments in ISPM No. 15 at their next meeting.

5. ISSUES ARISING FROM ICPM-7**5.1 Revised Terms of Reference and Rules of Procedures for the Standards Committee**

The SC took note that its revised terms of reference and rules of procedure had been adopted by ICPM-7, apart from Rule 9 (The business of the SC shall be conducted in [the 5 FAO working]

languages). ICPM-7 had requested that the Secretariat analyse the costs of working in 5 languages and other options (ICPM-7 Report, paragraph 58.5).

The SC took note of the new rules for membership in relation to the duration of terms. The new Rules of Procedure had changed the SC membership to a 3 year term, with the possibility of renewal for a further three year term. Additional terms thereafter would only be allowed through the exemption procedure. However, those members currently serving under a second two-year term remained on a two-year term, but would have the right to be nominated for a third two-year term (ICPM-7 Report: paragraphs 58.2, 58.3 and Appendix V).

5.2 Guidelines for the operation of expert working groups

The SC noted that the guidelines for the operation of expert working groups had been adopted by ICPM-7. The Secretariat explained that these guidelines were normally used when preparing for EWG meetings, but that it was not always possible to meet the deadlines set in the guidelines. These guidelines will be used in the draft form until the SC has the time to revise them.

5.3 Topics and priorities of standards

The SC noted the topics and priorities for standards adopted by ICPM-7, including the new topic on recognition of the establishment of pest free areas and areas of low pest prevalence.

The SC observed that topics had been categorised into high and normal priority by the ICPM and also noted that the call for topics and priorities would be every two years instead of annually (from 2007). It also noted that if topics are not included in the work programme by the ICPM, they would not be considered again at the next round of priority setting, except if resubmitted by countries (ICPM-7 Report, paragraph 93.4). Some members of the SC were disappointed that previous priorities would not be considered again and the SC asked the Secretariat to ensure that NPPOs be reminded that they should re-submit priorities if they wish them to be considered again.

5.4 Extracts from the ICPM report

The SC was informed by the Secretariat of a focus group to be held in July 2005 on international recognition of pest free areas and areas of low pest prevalence for pests. The Secretariat explained that the focus group would be an open-ended group including the Bureau and representatives from FAO regions that are not represented on the bureau.

The SC noted that RPPOs may now submit comments on draft standards directly to the Secretariat.

The SC noted that ICPM-7 had agreed to the publication of ISPMs in a book format, and that this would take place after review of the sections "definitions" by the Glossary Working Group.

6. REVIEW AND ASSIGNMENT OF STEWARDS

The SC assigned stewards to new topics on the standard setting work programme and made changes to stewards for some topics. In addition the SC agreed that stewards would draft specifications on their topics and present them to the next SC meeting (Appendix 2).

7. SPECIFICATIONS

7.1 Specification No. 17: Debarking

The TPFQ had proposed revisions to Specification No. 17. The technical panel was concerned that the terms "debarking" and "bark-free" were not clear in the context of ISPM No. 15 and had therefore proposed that the specification should be extended to include the term "bark-free". The TPFQ had also recommended that an expert from the lumber grading industry should be invited to participate in the EWG to help with defining these terms. In addition, it recommended deletion of the task which required the EWG to evaluate risks associated with bark as it considered this to be too difficult.

The SC discussed the proposed modifications and did not agree to the removal of estimation of risks associated with bark, because this should form the basis for technical justification of phytosanitary

measures. The SC recognized that estimation of all risks could be a large task, and consequently modified the task with a qualifying clause. The SC agreed to the addition of Mr. Thomas Searles (USA) as a member to the expert working group on debarking (Appendix 3).

7.2 Specification for Technical Panels No. 4 (1st revision)

The TPFQ had reviewed Specification for Technical Panels No. 4 during their meeting in March 2005 and had proposed an additional task. This was accepted by the SC with minor modifications (Appendix 4).

7.3 Specification No. 30: Recognition of establishment of pest free areas and areas of low prevalence

This topic had been added to the work programme by ICPM-7 and a draft specification had been produced by several members of the SC. The SC discussed whether the specification should include recognition of pest free places of production and production sites and agreed that the EWG should be asked to consider whether these should be included.

Mr Ribeiro e Silva insisted that the specification should refer to the work of the SPS Committee. He stated that there was polarity between developed and developing countries on the issue of regionalization and considered that this issue should be addressed by the competent standard setting bodies recognized by the SPS Agreement. The SC agreed that the references for the EWG should include the report of the open-ended working group on regionalization at ICPM-7, which mentioned the SPS.

The draft specification was modified to include situations where countries declare pest free areas and areas of low pest prevalence on the basis of general surveillance and without the need for complex bilateral arrangements. These situations should be analysed and should be covered by a draft standard, otherwise the standard would only be suitable for complex bilateral arrangements. The SC approved the specification (Appendix 5).

7.4 Specification for Technical Panels No 3 (1st revision)

The TPPT had reviewed the specification at its meeting in December 2004 and proposed that the scope and purpose of the panel should include evaluation of treatments associated with ISPM No. 15. This had been supported by the TPFQ.

The SC agreed to the proposed changes and modified the specification to make it clear that treatments adopted by the ICPM would be included in standards. The SC approved the specification (Appendix 6).

8. DRAFT STANDARD ON GUIDELINES FOR CONSIGNMENTS IN TRANSIT

Mr Arnitis explained that a draft ISPM had been submitted for country consultation in 2004. At its fifth meeting in November 2004, the SC had recommended that he should modify the text to take into account the comments received during country consultation and an email group of 4 SC members had been set up to review the text.

The draft had been modified to focus on requirements for countries of transit, rather than on requirements for countries of import. It had also been modified to clarify the roles and responsibilities of NPPOs and Customs as it is not the role of Customs to manage phytosanitary risks but rather to control imports. There was a brief discussion about the reference to ISPM No. 12, section 3.3 and it was decided to remove this reference as a revision to this section would be submitted to the standard setting work programme.

The SC considered the draft standard and further modified it, in particular to:

- ensure that it was clear that NPPOs had responsibility for phytosanitary measures, although Customs have a vital role in the process
- clarify in the background that the aim of the process is a pathway analysis

- reduce the list of options for risk assessment into a more focussed list (with a reference to the PRA process in ISPM No. 11) and
- make it clear that it is the NPPO that determines the required risk management measures.

A participant proposed changing the definition of “consignments in transit” to remove the words “and that is subject to appropriate official procedures”. The SC noted, however, that the definition would go to the GWG for consideration, and the proposed definition was retained.

The SC approved the draft standard for country consultation (Appendix 7).

9. APPROVAL OF DRAFT STANDARDS FOR SUBMISSION FOR COUNTRY CONSULTATION

Due to the large numbers of draft ISPMs, the Secretariat proposed that the SC split into two groups to consider the draft standards for submission for country consultation. The SC acknowledged that there was a large workload, but considered that it was important for the whole SC to hear and participate in the discussions. This would help SC members understand what had been intended during the drafting of each standard, and would consequently help with regional discussions on standards.

The SC therefore decided to work as a single group and to restrict comments on the drafts to major points, rather than undertaking re-drafting. The SC also agreed that, if drafts required major changes, they should be sent back to the EWGs or technical panels for further consideration.

9.1 Revision of ISPM No. 1, Principles for the protection of plant health

Mr Smith (EWG member), on behalf of the steward, introduced the new draft. A first draft had been returned to the EWG by the SC at its meeting in April 2004 due to concerns that it could have been considered to reinterpret elements of the Convention. The SC had recommended that the draft should be modified to quote sections of the Convention, where appropriate. The new draft had been produced in consultation with FAO Legal Service.

Mr Smith explained that the ISPM No. 1 had been regarded as a useful document by countries and it was still considered valuable to retain it. The SC observed that in some cases only the Convention text had been quoted and Mr Smith explained that this was when the IPPC quote was considered sufficiently clear without further explanatory text.

The SC noted that some of the definitions were under consideration by the GWG, but should be retained in the draft text for the present time.

The SC discussed the use of the phrase “implementing these standards ... without undue delay” in section 2.6 (harmonization) and the text was modified to bring it more in line with the text in the Convention.

The SC considered that it would be helpful to list the relevant ISPMs where appropriate, but accepted that the standard would require to be updated when new ISPMs are adopted. The SC agreed to quote the relevant IPPC Article and/or ISPM in the text.

The SC also considered whether section 3.2.1 should refer to “Emergency measures” or “Emergency actions”. Mr Smith pointed out that there was an explanation of these terms in the draft standard. The SC agreed to add “emergency measures” to the definitions.

Mr Klag was concerned about the use of the phrase “without undue delays” in Section 3.3.3: Administrative delays. He pointed out that the Convention could not regulate how a contracting party sets up its administrative procedures. However, other members of the SC supported the retention of this section and indicated that there were occasions when technical considerations had been addressed and additional administrative delays could be considered as disguised barriers to trade.

The SC noted that, although pest reporting was already mentioned in section 3.3.5 on information exchange, its importance warranted inclusion of a specific section, and a new section 3.2.5 on pest reporting was drafted. The SC approved the draft standard for country consultation (Appendix 8).

9.2 Diagnostic protocols for regulated pests

The SC reviewed the draft standard and considered the following issues:

- The use of the present tense. It could be considered that the draft text mixed instructions to NPPOs on requirements for diagnostic protocols with instructions to diagnosticians on how to use diagnostic protocols. The SC requested that the Secretariat check the draft to ensure that where requirements for NPPOs were mentioned, the terms “should” and “may” were used.
- Moving administrative procedures to Appendix 1 in the draft standard, for information.
- Publication of the diagnostic protocols. The SC was concerned about the availability of diagnostic protocols as individual standards. The TPDP had recommended that they should be published as annexes to this ISPM, but the SC recognized that there might be advantages in publishing them in other formats, for example as part of pest-specific ISPMs. The wording in the standard was adjusted accordingly. (See also Sec. 9.7)
- Clarification on the retention of specimens, particularly in cases of non-compliance.
- The SC recognized that diagnostic protocols produced by RPPOs or other international organizations may be used as the basis for IPPC diagnostic protocols, and modified the text accordingly.
- Some members of the SC proposed that requests for new protocols should come from NPPOs, rather than the proposed system in which the TPDP review priorities and make recommendations to the SC.

The draft text was approved for country consultation (Appendix 9).

9.3 Requirements for the submission and evaluation of phytosanitary treatments

The SC considered the draft ISPM produced by the TPPT and re-organized the text to start with the criteria for treatments and then the requirements for submission of treatments. The SC discussed the following points:

- Adopted phytosanitary treatments should have the status of ISPMs.
- The draft standard should clearly indicate the criteria for international phytosanitary treatments.
- Submissions for phytosanitary treatments should only be made by NPPOs or RPPOs, not by companies or researchers. This should prevent submissions that are not applicable for phytosanitary purposes.
- The evaluation process to be used by the TPPT should be included as an appendix to the draft standard
- The SC discussed whether there should be a minimum efficacy for adoption of treatments for international use, but decided that if an NPPO is putting forward a treatment, then the proposed treatment was consider useful. It was acknowledged that the required efficacy of a treatment will vary according to different circumstances, for example the pest status on a continent or in an area. A treatment may be appropriate for use in a systems approach and, if this is the case, then it should be indicated.
- The SC discussed whether treatments should meet minimum requirements for the majority of countries, as is the case for treatments in ISPM No. 15. It was suggested that this may be appropriate when commodity specific standards were drafted. The TPPT had envisaged that treatments would be adopted stating their efficacy and countries could then determine whether they were appropriate for their use depending on the pest risks identified.

The SC approved the draft for country consultation (Appendix 10).

9.4 Requirements for the establishment and maintenance of pest free areas for tephritid fruit flies

The SC reviewed the draft standard and considered the following issues:

- the situation where fruit flies do not occur and pest free areas are established as a result of general surveillance.
- whether fruit sampling should be a mandatory part of establishing a pest free area. Some members of the SC were concerned that fruit sampling was essential, especially in cases where a species was not attracted to lures. However, other members of the SC pointed out that fruit sampling was very labour intensive and expensive and may have most value where there is a pest outbreak.
- to provide general guidance in the section on re-instatement of pest free areas on normal procedures, rather than referring to bilateral agreements.
- whether the current annexes should be maintained as annexes, a compulsory part of the standard, or be transformed to appendices, which are for information purposes only and not considered part of the standard. The list of major fruit fly species was considered most suitable for inclusion as Appendix 1 in the draft standard.
- more clarity was needed in figures and tables in the sampling guidelines.

The SC approved the draft for country consultation (Appendix 11).

9.5 Revision of ISPM No. 2, Guidelines for Pest Risk Analysis

The SC considered the revised draft of this standard, which had been modified by an EWG after the SC meeting in April 2004. The SC commented that text was much improved, but still had some concerns, which included:

- the use of the term “phytosanitary risk analysis”. This term is not used in the IPPC (1997) and some members of the SC questioned whether there was a need to introduce new terminology when the phytosanitary community was familiar with the term “pest risk analysis”. However, the ICPM had identified that there was a need to address the issue of considering an organism in order to determine if it is a pest or has potential to be a pest before continuing with a pest risk analysis, such as an LMO. Some SC members supported the need for the ISPM to address this issue and pointed out that ISPM No. 11 referred to “pest” risk analysis. This could be interpreted as “risk analysis of a pest” (meaning that organism being analysed under this ISPM was already considered to be a pest) or as “analysis of pest risk” (meaning analysis of the “pest risk” presented by an organism).
- clarification of the process of categorization, and conformity with the existing structure in ISPM No. 11.
- overlap in the text between general and specific requirements, leading to potential confusion.

Mr Hedley informed the SC that as a result of the discussions in the EWG he had been convinced that the draft standard would provide a useful addition to the group of PRA standards. The Secretariat reminded the SC that hazard identification and communication were normal parts of risk analysis in other standard setting organizations

The SC considered how this draft should be processed. Some SC members supported that it should be sent for consultation, but others preferred that further work should first be carried out. The SC finally agreed that the draft would first be sent to the international plant health risk analysis network (i.e. an international email discussion group on PRA) prior to the International Plant Health Risk Analysis Workshop in Canada in September 2005. In agreement with the workshop steering committee, it was agreed that a discussion on this topic would take place during the workshop. Finally, after the workshop, an expert working group composed of the steward (Mr. Ebbe Nordbo), some members who attended the previous EWG meeting (Mr. Moses Kairo, Mr. Allan Auclair) and some members of the workshop steering committee (Ms. Lesley Cree, Ms. Velia Arriagada and Ms. Gritta Shrader) to further adjust the text. The draft would then be presented to the SC in May 2006.

9.6 Efficacy of phytosanitary measures: concept and application

A new draft was presented to the SC after a second meeting of an expert working group. Mr Hedley (steward) reported on the discussions in the EWG and explained that efficacy is often described as effectiveness of treatments under defined conditions (often in a medical context). The term “specified

phytosanitary effect” originated as a result of discussions on the “required response”. The EWG had considered that this term may be useful when considering sampling and the concept of “acceptable level of protection”.

The SC congratulated the EWG on the improvements to the draft, but still had some concerns, which included:

- the lack of practical guidance for NPPOs in how to assess the efficacy of measures.
- the introduction of the term “specified phytosanitary effect”
- the a new requirement in the draft that the specified phytosanitary effect should be published in regulations
- the proposal to express a specified phytosanitary effect as a “maximum acceptable infestation rate per consignment”.

Mr Hedley pointed out that if countries inspected to a certain rate, then in practice they had set a specified phytosanitary effect. Some members of the SC considered that the draft had taken the concept too far.

The SC decided that it would be preferable to put the draft on hold until further work had been done on some other standards, including sampling and the supplement to the Glossary on appropriate level of protection. These may help to set the context for the draft standard on efficacy of measures.

9.7 Guidelines for formatting and drafting pest / commodity-specific ISPMs

The Secretariat reported that the EWG on formatting of pest and commodity-specific ISPMs had produced two draft standards and had recommended that each pest-specific standard should have the appropriate diagnostic protocol attached as an annex.

The SC discussed the practicality of publishing diagnostic protocols as annexes to two separate ISPMs, recognising that there would be difficulties in updating documents that had been published in two places. They also acknowledged the importance of having information readily accessible for users of standards. The SC recommended that the Secretariat could develop a suitable system and incorporate the text of the draft standards on formatting of pest- and commodity-specific ISPMs into an administrative procedure. Because these two topics were part of the work programme for the ICPM, the SC decided to make a request at ICPM-8 to remove these topics from the standard setting work programme.

As there was insufficient time during the meeting to consider the draft standards in detail, the SC was requested to consider the documents and to send comments to the Secretariat by 15 June 2005 for transmission to the stewards.

9.8 *Proposed revision to Methyl Bromide (MB) Fumigation Schedule of Annex I of ISPM No. 15 (Guidelines for regulating wood packaging material in international trade.)*

The Secretariat explained that, at the time of adoption of ISPM No. 15 in 2002, there had been agreement to review the methyl bromide fumigation schedule in Annex 1 of the standard, in the light of information provided by Korea and China. Subsequent research had been done to define an effective treatment schedule. The International Forest Quarantine Research Group (IFQRG) had reviewed the data at its meeting in February 2005, and made a proposal for modification to the TPFQ. The TPFQ had then accepted the proposal and modified Annex I of ISPM No. 15 and recommended that the schedule should be changed to take into account of this new data.

The SC considered the proposal. It noted that that Annex 2 of the draft report of the TPFQ had recommended a number of changes to ISPM No. 15, including inserting explanatory text for the schedule to provide guidance on factors to be considered in effective operation of the treatment. Mr Sakamura requested that the explanatory text be inserted into the revised annex, but other members of the SC had concerns over the wording proposed by the TPFQ and wished to make minimal changes to the Annex I of ISPM No. 15. The SC considered that the most important issues at this stage were the

new timescale of 24 hours and the adjustments to the gas concentrations. The SC made further minor editorial changes.

The SC agreed that, the modified methyl bromide Schedule 1 in ISPM No. 15, Annex I (Appendix 12) should be sent to NPPOs for country consultation under the fast-track standard setting process. As the modified schedule had been discussed during the SC meeting, the timing was such that it would be sent out at about the same time as the draft ISPMs under the normal country consultation process. The Secretariat agreed, however, to make it clear to NPPOs that consultation for this document was being done under the fast-track standard setting process.

10. DRAFT ADMINISTRATIVE GUIDELINES FOR THE STRUCTURE OF STANDARD-SETTING DOCUMENTATION

The SC discussed the revised document and noted that in Section 3.3.2 (Language) the guidelines referred to the use of the words “should” and “may” in ISPMs. The use of the terms “must”, “shall”, “should” and “may” had been discussed at ICPM-7 and it had been agreed that further guidance would be provided by the Secretariat in consultation with the Technical Consultation among Regional Plant Protection Organizations for ICPM-8 (ICPM-7 Report, para. 51). The SC considered that the current wording provided guidance until would be used until a decision was taken, and was useful for standard setting purposes, but added a footnote explaining the decision taken ICPM-7.

The SC approved the document and agreed that it should be published in the Procedural Manual and updated as necessary. It was also noted that this document should not be formatted to look like an ISPM.

11. NEW ADMINISTRATIVE DOCUMENTS

The SC was informed of the following procedures proposed by technical panels:

- Procedure for production of diagnostic protocols
- Procedure for production of phytosanitary treatments
- Procedure for submission of treatments for forest quarantine
- Instructions to authors of diagnostic protocols for pests
- Request form for treatments to be considered in the work programme of the Technical Panel on Phytosanitary Treatments for adoption as an international treatment.

The SC agreed that these procedures should be published in the procedure manual. If SC members had comments on the documents, they should send them to the Secretariat by 1 July 2005. The procedures would then be adjusted as appropriate by the stewards and incorporated into the next version of the procedure manual.

12. UPDATE ON THE PREPARATION OF EXPLANATORY DOCUMENTS

The Secretariat presented a document giving the status of explanatory documents under development.

The SC agreed to the following:

- to see the draft currently under development before initiating new documents, except that explanatory documents should be initiated for the standards adopted by ICPM-7.
- that an explanatory document for LMOs was essential now that the Cartagena protocol was in force.
- to receive documents by email with a response time of 4 weeks (6 weeks during holiday periods). The SC's role will be to ensure that the texts are clear and do not contain inaccuracies.
- that each explanatory document should have a disclaimer, to be drafted by the IPPC Secretariat, and checked with FAO Legal Service.

13. REVIEW OF THE IMPROVEMENTS TO THE STANDARD SETTING PROCESS

The SC noted the following changes to the standard setting process included the:

- creation of technical panels;

- reduction of the country consultation period to 100 days in the normal standard setting process.
- fast-track standard setting process;
- increased size of the SC and

The SC considered that the technical panels had been very productive with good results already, but that it was too early to tell how effective some panels would be. The SC noted that some procedures, although they provide for a more transparent approach to standard setting, put additional resource pressure on the Secretariat.

The SC had no experience with the fast track standard setting process yet, and was unable to comment, but would gain experience this year.

14. PROPOSAL FOR FURTHER IMPROVEMENTS TO THE STANDARD SETTING PROCESS

14.1 Proposal to Extend the Cycle for Standard Setting for Concept Standards

Mr Hedley presented a paper proposing improvements to the standard-setting process and the Secretariat presented a paper on a proposed schedule for the annual standard setting work programme.

The SC as concerned that there was insufficient time for proper scrutiny of draft ISPMs, especially now that the number of drafts and comments have increased, and supported the extension of the period of time for developing draft standards. In particular, sufficient time should be allowed for consideration of concept standards. Stewards should also have more time to consider country comments and the SC to consider changes proposed by the SC-7. The SC discussed various options for change and agreed to try phasing in a new system with possible implementation dates of 2006 or 2007. It agreed that draft standard sent for consultation this year which resulted in a large number of comments that significantly affected the content of the draft would not be considered by the SC in November. These comments should be examined in depth by the steward allowing time to reflect on the comments. The steward would then provide direction on the draft standard to the SC at its next meeting

In order to produce a workable procedure, the SC agreed that the Secretariat, together with Mr Hedley, would work on options for implementing a revised procedure to be presented to the SC in November.

14.2 Glossary – changes to existing terms or new terms

The Secretariat reported that country comments at consultation often propose modification or creation of Glossary definitions. Due to time constraints, the GWG was not in a position to consider these proposals and it was felt that such proposals should better be made through another process. The SC agreed that an extra line for new or revised definitions should be inserted in the topics and priorities for standards form.

14.3 Development of an annotated Glossary

The SC agreed that Mr Ian Smith should be asked to draft an annotated Glossary, due to his considerable experience in the area.

14.4 Review of all ISPMs

The SC noted that the next meeting of the GWG would review the Definitions sections in all ISPMs in order to prepare the publication of ISPMs in a book format. The SC suggested that the GWG could at the same time review standards in a more general way, and be asked to prepare a paper on the need for revision of individual standards. The GWG meeting would be extended to a five day meeting to accommodate this extra task.

15. CONSEQUENCE FOR STANDARD SETTING OF THE MEMORANDUM OF COOPERATION BETWEEN THE IPPC AND CBD SECRETARIATS

This item was postponed until the next meeting.

16. ADMINISTRATIVE DOCUMENTS RETURNED TO SC FOR FURTHER CONSIDERATION (ICPM-7)

Discussion on this item was postponed until the next meeting.

17. OTHER BUSINESS

17.1 Proposal from the International Seed Federation to work with the TPDP

The SC discussed a request from the International Seed Federation (ISF) to be able to submit diagnostic protocols for seed health testing to the TPDP. The SC agreed that the Secretariat could invite the ISF to submit a paper to the TPDP. In addition, since the International Seed Testing Association (ISTA) currently adopts international seed testing protocols, ISTA should also be invited to present a paper to the TPDP.

17.2 Regional workshops on draft ISPMs

The SC noted the proposed timing of regional workshops on draft ISPMs, and a SC member was selected to lead the discussions on standards at each workshop.

17.3 Report of ISPM No. 15 Workshop and update on PRA workshop

A workshop on the practical application of ISPM No. 15 was held in Vancouver, Canada from 28 February - 4 March 2005. 172 delegates attended the workshop, representing 80 countries. The workshop was made possible by a substantial financial contribution from the Standards and Trade Development Facility and due to their contribution 63 delegates from developing countries were able to attend.

The overall feedback received from delegates was that the workshop had been highly relevant, informative, and timely and had provided useful information for the practical implementation of ISPM No. 15.

The Secretariat is also involved with Canada as host in organizing another international workshop on Plant Health Risk Analysis which will take place 24-28 October 2005 in Canada. Information will be posted on the International Phytosanitary Portal (www.ippc.int) as it becomes available. Funds are currently being sought to assist participants requiring financial assistance with travel expenses.

The proposed workshop will aim to strengthen expertise and increase capacity in the area of PRA, particularly for developing country participants. The IPPC's standards for PRA (ISPMs No. 2, 11 and 21, in particular) will be explored in detail with a view to harmonizing methods for their implementation internationally. Improved methods and procedures for enhancing PRA as a tool to protect plant resources will be developed through discussion of current methods in use in various countries and the strengths and weaknesses of different approaches.

18. SELECTION OF SC WORKING GROUP (SC7)

The SC was reminded that rule -- of the Rules of procedure of the Standards Committee, adopted by ICPM-7, implied that members of the SC-7 would be in place for the period of their term on the SC. Consequently, there was no vacancy on the SC-7 at present. The composition of the SC-7 is currently: Mr Challaoui (Morocco), Mr Wang Fuxiang (China), Mr Jens Unger (Germany), Mr Odilson Ribeiro e Silva (Brazil), Mr Mohammad Katbeh Bader (Jordan), Mr Nancy Klag (USA) and Mr Hedley (New Zealand)

19. DATES OF SC MEETINGS

The meeting of the SC working group (SC7) will be held from 31 October to 4 November 2005 and the full SC will meet the following week from 7-11 November 2005. The ICPM is scheduled to take place on 3-7 April 2005.

20. CLOSE

The chair of the meeting thanked the SC members for their work, especially considering the volume of documents that were presented, and closed the meeting.

**INTERIM COMMISSION ON PHYTOSANITARY MEASURES
STANDARDS COMMITTEE
25-29 April, 2005, Rome**

Start time: 10:00 am Monday 25 April 2005
Philippines Room C277/281

AGENDA
(REVISED VERSION: 25-04-2005)

1. Opening of the meeting
2. Adoption of the agenda
3. Adoption of the report of the previous meeting and outstanding business
4. Status of ISPMs under development and reports from Stewards
5. Issues arising from ICPM 7
 - 1) Revised Terms of Reference and Rules of Procedures for the Standards Committee
 - 2) Guidelines for the operation of expert working groups
 - 3) Topics and priorities of standards
 - 4) Extracts from the ICPM 7 report related to the SC and standard setting.
6. Review and assignment of Stewards
7. Specifications:
 - 1) Proposed modifications to Specification No. 17: Debarking
 - 2) Proposed modification to Specification No. 4: TPFQ
 - 3) Draft Specification No. 30: Guidelines for the recognition of the establishment of pest free areas and area of low pest prevalence
 - 4) Proposed modification to Specification No. 3: TPPT.
8. Draft standard on Consignments in Transit, for further consideration
9. Approval of drafts standards for submission for country consultation
 - 1) Revision of ISPM No. 1, Principles of plant quarantine as related to international trade
 - 2) Diagnostic Protocols for Pests
 - 3) Requirements for the submission and evaluation of phytosanitary treatments
 - 4) Requirements for the establishment and maintenance of pest free areas for tephritid fruit flies
 - 5) Revision of ISPM No. 2, Guidelines for Pest Risk Analysis
 - 6) Efficacy of phytosanitary measures: concept and application
 - 7) Guidelines for formatting and drafting pest / commodity specific ISPMs.
 - 8) Proposed revision to Methyl Bromide (MB) Fumigation Schedule of Annex I of ISPM No. 15 (Guidelines for regulating wood packaging material in international trade).
10. Draft Administrative Guidelines for the Structure of Standard-setting documentation
11. New administrative documents:
 - 1) Procedure for production of diagnostic protocols
 - 2) Procedure for production of phytosanitary treatments

- 3) Procedure for submission of treatments for forest quarantine
 - 4) Instructions to authors of diagnostic protocols for pests
 - 5) Request form for treatments to be considered in the work programme of the Technical Panel on Phytosanitary Treatments for adoption as an international treatment.
12. Update on the preparation of explanatory documents, and future process
 13. Review of the improvements to the standard setting procedure
 14. Proposal for further improvements to the standard setting process
 - 1) Proposal To Extend The Cycle For Standard Setting For Concept Standards
 - 2) Glossary – changes to existing terms
 - 3) Development of an annotated glossary
 - 4) Review of all ISPMs.
 15. Consequence for standard setting of the memorandum of cooperation between the IPPC and CBD secretariats
 16. Administrative documents returned to SC for further consideration (ICPM-7)
 - 1) Guidelines on the duties of members of the Standards Committee
 - 2) Guidelines on the role and responsibilities of a Steward of an ISPM
 - 3) Criteria for the formation, content and subsequent change of supplements, annexes and appendices in ISPMs
 - 4) Procedures for the development and adoption of international standards for phytosanitary measures (including criteria for determining the need for further rounds of consultations on draft standards). In addition, incorporate the fast track process (ICPM-6).
 17. Other business
 - 1) Proposal by International Seed Federation to work with the TPDP
 - 2) Regional workshops on draft ISPMs
 - 3) Report of ISPM No. 15 workshop and update on PRA workshop.
 18. Selection of SC-7
Previous SC-7: Mr Challaoui (Morocco), Mr Wang Fuxiang (China), Mr Jens Unger (Germany), Mr Odilson Ribeiro e Silva (Brazil), Mr Mohammad Katbeh Bader (Jordan), Mr Nancy Klag (USA) and Mr Hedley (New Zealand)
 19. Dates of next meetings
 - 1) SC-7: 31 October to 4 November 2005
 - 2) SC: 7-11 November 2005
 - 3) ICPM: 3-7 April 2005-09-29
 - 4) Annual work programme and future meeting dates
 20. Close

STEWARDS FOR TOPICS FOR STANDARDS AND DRAFT STANDARDS

From ICPM 7		
Priority	Topic	Steward
High	Guidelines for pre-inspection / pre-clearance	Michael Anthony HOLTZHAUSEN
High	Guidelines for the recognition of the establishment of pest free areas and area of low pest prevalence	Diego QUIROGA
High	Import of organic fertilizers	Alizadeh Aliabadi ALI
High	Plants for planting (Including Movement of plants for planting, Post-entry quarantine for plants for planting, Certification programmes for plants for planting)	David OPATOWSKI
High	PRA for plants as pests	David PORRITT
High	Supplement to ISPM No. 5: Appropriate level of protection	Carol THOMAS
High	Supplement to ISPM No. 5: Guidelines on the understanding of "not widely distributed"	Jens-Georg UNGER
Normal	Guidelines for regulating stored products in international trade	Karyeija ROBERT
Normal	Inspection manual	Narcy KLAG
Normal	Soil and growing media	Mohammad R. KATBEH BADER
On Hold	Review of ISPM No. 12 (<i>Guidelines for phytosanitary certificates</i>): Section 3.3 in relation to transit. (pending completion of draft standard on Consignments in transit)	Narcy KLAG
From ICPM 6		
	Imports of Plant Breeding Material	Obbineni RAMALINGA REDDY
Changes to Existing Stewards		
	Guideline for surveillance for specific pests: citrus canker (<i>Xanthomonas axonopodis</i> pv. <i>citri</i>) (Lawrence BROWN replaced)	Michael Anthony HOLTZHAUSEN
	Post-entry quarantine facilities (David PORRITT replaced)	Abdellah CHALLAOUI

SPECIFICATION NO. 17 (1ST REVISION)

Title: Debarking of wood and bark freedom

Reason for the standard:

Different interpretations by plant health authorities on what constitutes debarked and bark-free wood (partial or complete freedom/absence of bark on the finished product) often have an impact on the international trade of wood and wood products. Therefore, a standard is required to elaborate on what constitutes debarked and bark-free wood.

Scope and purpose:

The purpose of this standard is to provide a practical and useful description of what constitutes debarked and bark-free wood. This standard may, therefore, propose tolerances for bark in relation to the definitions of debarked and bark-free wood.

Tasks:

The Expert Working Group (EWG) should:

1. choose an appropriate title for the draft standard;
2. develop criteria to determine whether wood is or is not debarked or bark-free;
3. liaise with the Technical Panel on forest quarantine and other relevant EWGs regarding pest risks and results of research relating to debarking;
4. if appropriate, estimate pest risks associated with remaining bark after debarking (for example, thickness, size of individual patches etc.);
5. provide on site, visual inspection methodology for assessing bark amounts on wood including estimating surface area and thickness of bark present (which may be similar to keys for assessing area of leaf infection);
6. propose tolerances for the presence of bark (area and thickness) on wood in cases where debarking is required;
7. discuss whether this draft standard should be a stand-alone standard or a component of an existing standard (e.g. a supplement to the glossary);
8. consider the existing grading standards and manufacturing practices associated with removal of bark to ensure the standard is practical and widely applicable;
9. review the current glossary definitions for bark-free wood and debarking and any other relevant definitions and propose revisions as necessary.

Provision of resources: Funding for meetings is provided from the regular programme of the IPPC Secretariat (FAO) except where expert participation is funded voluntarily by the expert's government.

Steward: Ringolds Arnitis.

Collaborators: EPPO.

Expertise of EWG: Phytosanitary, lumber grading and/or inspection experience. 6-8 experts.

Participants: To be determined. It is recommended that the EWG includes some experts from the Technical Panel on forest quarantine.

Approval: Introduced into the work programme by the ICPM at its sixth session in April 2004. Specification reviewed by the extraordinary working group of the Standards Committee meeting in July 2004 and approved by the SC in November 2004. Specification reviewed by the Technical Panel on Forest Quarantine in March 2005. 1st revision approved by the SC in April 2005.

References: Relevant ISPMs and specifications; *Plant Pathology* or similar journals that have visual keys such as those for assessing surface area of leaf infection; national lumber grading standards.

SPECIFICATION FOR TECHNICAL PANELS NO. 4 REV 1

Title: Technical Panel on forest quarantine

Reason for the Technical Panel: ICPM-6 identified the need for the formation of a Technical Panel on forest quarantine issues.

Scope and purpose: The Technical Panel on forest quarantine will deal with technical matters regarding forest quarantine issues. It will review relevant technical and scientific information to provide guidance to the SC as requested on development, amendment and revision of standards.

Tasks:

The Technical Panel should:

1. identify needed standards and recommend priorities for standards to the SC;
2. identify standards that need further research and report this to the SC;
3. in collaboration with the Technical Panel (TP) on phytosanitary treatments, develop a process for the submission of forest quarantine research information (e.g. data on alternative treatments for wood packaging) and, where appropriate, adjust the criteria for submitting and evaluating scientific research data for phytosanitary measures (treatments) for specific standards to meet forest quarantine needs;
4. identify the extent to which the work of this panel overlaps with the work of other groups, such as the EWG on debarking of wood, the TP on phytosanitary treatments and relevant research groups, and ensure coordination with these groups to prevent duplication of work;
5. as necessary, propose revisions for the existing treatment parameters provided in Annex I of ISPM No. 15;
6. provide recommendations on alternative treatments for inclusion in Annex I of ISPM No. 15;
7. analyse existing research data and identify knowledge gaps relating to the pest risks of bark remaining on wood and wood packaging material and make proposals to the SC
8. Consider outcomes and issues of relevant IPPC workshops (e.g., the IPPC Workshop on the Practical Application of ISPM No. 15, Vancouver, 2005) or other relevant IPPC meetings, and, where appropriate, make recommendations to the SC whether revisions to the standard are necessary.

Provision of resources: Funding for meetings is provided from the regular programme of the IPPC Secretariat (FAO) except where expert participation is funded voluntarily by the expert's government.

Steward: Gregory Wolff.

Collaborator: FAO.

Expertise of Technical Panel: Expertise in forest quarantine issues from both the research and phytosanitary fields including practical experience. 4-7 participants (from several regions)

Participants: To be determined.

Approval: Introduced into the work programme by the ICPM at its Sixth session in April 2004. Specification reviewed by the extraordinary working group of the Standards Committee meeting in July 2004 and approved by the SC in November 2004. Revised by the TPFQ in March 2005. Revised specification approved by the Standards Committee, April 2005.

References: Appropriate ISPMs, specifications and ICPM reports, IFQRG reports of meetings.

SPECIFICATION No. 30

Title: Guidelines for the recognition of pest free areas and areas of low pest prevalence

Reason for the standard: During ICPM-7 it was agreed that general guidance for the recognition of pest free areas (PFAs) and areas of low pest prevalence (ALPPs) (referred to as *regionalization*) should be developed.

Scope and purpose: The standard will outline the main criteria for the recognition of PFAs and ALPPs. Furthermore it will provide guidance on the process that may need to be followed by both the importing and exporting countries for recognition of such areas. This is to ensure that importing and exporting countries have appropriate guidance on the activities required under the IPPC and its standards, that exporting countries can achieve recognition of regionalization without undue delay while importing countries can continue to maintain their appropriate level of protection.

This standard will not include specified timelines for the steps outlined within the general guidance.

Tasks:

The EWG should:

1. identify, in the background of the standard, the main issues related to recognition of regionalization that falls within the ambit of IPPC, OIE and WTO-SPS;
2. identify and describe the relevant situations for which guidance on recognition of PFAs and ALPPs is required. This may include situations where countries set up such areas based on general surveillance or other requirements and make the required information available to their trading partners only, or where the recognition of such areas requires a detailed bilateral process
3. develop a process flow chart that outlines the major steps and criteria required for recognition of a PFA or ALPP for such situations, and make use of case studies from countries that have experience with such situations.
4. specify what needs to happen and the major steps in such situations. This guidance may include:
 - a. the type of the request by the exporting country that the importing country considers and recognizes a PFA or ALPP;
 - b. the nature of the acknowledgement the importing country provides to the exporting country and information on the procedures to be undertaken by the importing country for the evaluation and recognition of the PFA or ALPP including any regulation establishment.
 - c. the information package on the establishment, maintenance and monitoring of the PFA or ALPP developed by the exporting country and made available or submitted to the importing country for recognition of the PFA or ALPP;
 - d. reference to standards concerning the evaluation and assessment of PFAs or ALPPs;
 - e. the form and content of requests for additional information to complete the evaluation by the importing country;
 - f. possible guidance on the systems used to verify that the PFA or ALPP are maintained;
 - g. description of the documentation needed for the systems.
5. describe the process for providing progress updates between the parties, so information on the progress to achieve recognition is transparently available.
6. The EWG may analyze the relationship and similarities of this standard with the recognition of pest free places of production and pest free production sites. It may propose an integration of guidance on the recognition of such places into the standard.

Provision of resources: To be determined.

Steward: Diego Quiroga.

Collaborator: None.

Expertise: Experience in the development and recognition of PFAs and ALPPs; experience in phytosanitary regulation; experience in bilateral discussions; expertise from a variety of disciplines.

Participants: 6-8 experts

Approval: Introduced into the work programme by the ICPM at its seventh session in April 2005. Specification approved by the SC in April 2005.

References: Report of the open-ended working group on regionalization (Appendix XII of the report of ICPM-7, 2005).

SPECIFICATION FOR TECHNICAL PANELS No. 3 - REV. 1

Title: Technical Panel on phytosanitary treatments.

Reason for the Technical Panel: ICPM-6 identified the need for the formation of a Technical Panel on treatments.

Scope and purpose: The Technical Panel will be involved in issues relating to phytosanitary treatments including collecting, reviewing and recommending them to be used internationally.

Tasks:

1. Identify and collect existing treatments which are internationally needed.
2. Evaluate treatments and recommend which ones should be included in standards adopted by the ICPM.
3. Classify the treatments in a logical manner (by pest, groups of pests, commodities, crops, etc.).
4. Review existing phytosanitary treatments included in standards adopted by the ICPM and recommend updates as needed.
5. Propose drafts to the Standards Committee.
6. Develop a procedure for the submission of new proposals for treatments and their evaluation by the Technical Panel.
7. Collect information on regulated pests and treatments needed for those pests so that recommendations can be made to research institutions.
8. When needed, identify experts on treatments.

Provision of resources: Funding for meetings is provided from the regular programme of the IPPC Secretariat (FAO) except where expert participation is funded voluntarily by the expert's government.

Proposed work programme: To be determined.

Steward: Nancy Klag.

Collaborator: To be determined.

Expertise: Mixture of treatment researchers and personnel with practical treatment expertise.

Participants: 4 – 5

Approval: Introduced into the work programme by the ICPM at its sixth session, April 2004. Specification approved by the Standards Committee, April 2004. Revised by the TPPT in December 2004. Revised specification approved by the Standards Committee, April 2005.

References: ISPM No. 9 (*Guidelines for pest eradication programmes*); ISPM No. 14 (*The use of integrated measures in a systems approach for pest risk management*); ISPM No. 18 (*Guidelines for the use of irradiation as a phytosanitary measure*); USDA Treatment Manual.

*Draft ISPM
May 2005
For country consultation*

**INTERNATIONAL STANDARDS
FOR PHYTOSANITARY MEASURES**

GUIDELINES FOR CONSIGNMENTS IN TRANSIT

Secretariat of the International Plant Protection Convention
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, ----

CONTENTS

INTRODUCTION

SCOPE

REFERENCES

DEFINITIONS

OUTLINE OF REQUIREMENTS

BACKGROUND**REQUIREMENTS**

- 1. Risk Analysis for the Country of Transit**
 - 1.1 Risk identification
 - 1.2 Risk assessment
 - 1.3 Risk management
 - 1.3.1 Transit under Customs control only
 - 1.3.2 Transit with phytosanitary measures in addition to Customs control
 - 1.3.3 Other phytosanitary measures
- 2. Responsibilities of the Contracting Party**
- 3. Measures for Non-compliance and Emergency Situations**
- 4. Cooperation and Communication**
- 5. Minimal Impact**
- 6. Review**
- 7. Documentation**

INTRODUCTION

SCOPE

This standard describes procedures to identify, assess and manage phytosanitary risks associated with consignments of regulated articles passing through but not destined for the territory of a country, in such manner that any phytosanitary measures applied in the country of transit are technically justified and necessary to prevent the introduction into and/or spread of pests within that country.

REFERENCES

- Glossary of phytosanitary terms*, 2004. ISPM No. 5, FAO, Rome.
Guidelines for pest risk analysis, 1996. ISPM No. 2, FAO, Rome.
Guidelines for phytosanitary certificates, 2002. ISPM No. 12, FAO, Rome.
International Plant Protection Convention, 1997. FAO, Rome.
Pest reporting, 2002. ISPM No. 17, FAO, Rome.

DEFINITIONS

At its Seventh session in April 2005, the Interim Commission on Phytosanitary Measures adopted recommendations on the publication of ISPMs in a book format (see ICPM-7 report, paragraph 39 and Appendix II). Each book of ISPMs will contain a glossary chapter, i.e. the *Glossary of phytosanitary terms* (ISPM No. 5) in the relevant language.

The "definitions" section in the present ISPM, once integrated into the book, will not contain any definitions but will refer to the Glossary chapter of the book (ISPM No. 5). However, for the purpose of country consultation, this section contains terms or definitions which are new or revised in the present draft standard. Once this standard has been adopted, the new and revised terms and definitions will be transferred into the Glossary chapter of the book (ISPM No. 5), and will not appear in the standard itself.

Revised definition:

consignment in transit

A consignment passing through but not destined for the territory of a country and that is subject to appropriate official procedures.

OUTLINE OF REQUIREMENTS

International trade may involve the movement of consignments of regulated articles passing through but not destined for the territory of a country, under Customs control. Such movements may present a phytosanitary risk to the country of transit. Contracting parties to the IPPC may apply measures to consignments in transit through their territories, provided that the measures are technically justified and necessary to prevent the introduction and/or spread of pests (Article VII.4 of the IPPC, 1997).

This standard provides guidelines by which the NPPO of the country of transit may decide which movements require intervention of the NPPO, and subjected to phytosanitary measures, and if so, the type of phytosanitary measures. For those cases the responsibilities and elements of the transit system are described, together with the needs for cooperation and communication, non-discrimination, review and documentation.

BACKGROUND

Consignments in transit and their conveyances are included within the scope of the IPPC in Article VII and in Article I. Article VII.4. states:

“Contracting parties may apply measures specified in this Article to consignments in transit through their territories only where such measures are technically justified and necessary to prevent the introduction and/or spread of pests”.

Article I.4 states:

“Where appropriate, the provisions of this Convention may be deemed by contracting parties to extend, in addition to plants and plant products, to storage places, packaging, conveyances, containers, soil and any other organism, object or material capable of harbouring or spreading plant pests, particularly where international transportation is involved”.

Transit involves the movement of consignments of regulated articles passing through but not destined for the territory of a country (further referred to as country of transit).

Consignments in transit may pass through the country remaining enclosed, without being split up or combined with other consignments, and without having their packaging changed. Under such conditions, the movement of consignments will in many cases not present a phytosanitary risk and will not require phytosanitary measures, especially if the consignments are transported in containers¹.

Consignments and their conveyances passing through a country in transit may, however, also be transported or dealt with in such a manner that they do present a phytosanitary risk. This may for instance be the case when consignments are transported open rather than enclosed, or when they do not pass directly through the country but are held for a period of storage, or are split up, combined or repackaged, particularly if the type of transport changes (e.g. from ship to railway). In such cases, phytosanitary measures may be applied in the country of transit to prevent introduction of pests into, and/or their spread within, that country.

It should be noted that transit is not only a phytosanitary procedure but also an administrative one, which is used as Customs procedures where goods are transported under Customs control. Customs control may include document verification, tracking (e.g. electronic), sealing, control of carrier and entry/exit control. Customs control by itself does not always guarantee phytosanitary integrity and security of consignment and thus will not necessarily offer protection against introduction or spread of pests.

Cooperation among NPPOs and Customs is essential to establish and/or maintain an effective transit system and identify consignments of regulated articles in transit. Specific agreement with Customs may be needed for the NPPO to be informed of and have access to consignments under Customs control.

REQUIREMENTS

1. Risk Analysis for the Country of Transit

1.1 Risk identification

To identify potential phytosanitary risk related to consignments in transit, the NPPO of the country of transit (from this point onwards the NPPO) should collect and review information.

Elements of such information may include:

- procedures applied by customs and other relevant services
- classes of commodities or consignments of regulated articles in transit
- means and methods of transport for consignments in transit
- regulated pests associated with the consignments in transit
- host distribution in transit route
- possibilities of escape of pests from consignments
- existing phytosanitary measures for consignments of commodities in transit
- types of packaging and conditioning
- conditions of transport (refrigeration, modified atmosphere, etc.).

The NPPO may decide that consignments in transit that pose no potential phytosanitary risk may move or continue to move without phytosanitary measures. This is for instance the case when no pests

¹ I.e. a standard transport container as used in ocean going trade.

regulated by the country of transit are associated with the consignments in transit or when pests cannot escape from the consignment in transit.

If potential phytosanitary risks are identified, risk assessment for consignments in transit may be needed, in order to identify the necessity and technical justification of any phytosanitary measure.

Only those phytosanitary risks which concern pests already regulated by the country of transit or those pests that are under emergency action will normally be considered.

1.2 Risk assessment

Consignments in transit constitute a potential pathway for the introduction and/or spread of pests. An assessment of the phytosanitary risk associated with transit should normally focus only on evaluating the probability of pests being introduced or spread from consignments in transit. The associated potential economic consequences should have been evaluated in the case of a regulated pest and therefore should not need to be repeated.

Guidance to the assessment of probability of introduction and spread of a pest is provided in ISPM No. 11 (*Pest risk analysis for quarantine pests, including analysis of environmental risks and living modified organisms*) in particular section 2.2. For consignments in transit, the following information may also be relevant:

- pathways for introduction and spread of regulated pests from the consignments in transit
- dispersal mechanism and mobility of the relevant pests
- transport means (truck, rail, aeroplane, ship) and mode of transport (closed, sealed, refrigerated, etc.)
- packaging mode
- changes of configuration (combined, split, repacked)
- duration of transit or storage, and storage conditions
- route taken by the consignment prior to and within country of transit
- frequency, volume and season of transit

Based on risk assessment, consignments in transit may be classified into two broad categories:

- requiring NPPO intervention, or
- to be handled by Customs control only.

Phytosanitary measures for consignments in transit can only be applied for pests regulated in the country of transit or those pests that are under emergency action.

1.3 Risk management

The NPPO, through risk assessment, determines how a consignment will move.

1.3.1 Transit under Customs control only

The NPPO, through risk assessment, may determine that the Customs control alone is adequate. If this is the case, the NPPO does not need to apply any phytosanitary measures in addition to Customs control.

1.3.2 Transit with phytosanitary measures in addition to Customs control

If the risk assessment for consignments in transit concludes that Customs control alone is insufficient, the NPPO may determine that phytosanitary measures are necessary. These may include for example requirements for:

- commodity verification
- phytosanitary transit permits
- phytosanitary certificate (with transit requirements)
- designated entry and exit points
- verification of exit
- designated transit routes
- NPPO prescribed equipment or facilities
- Customs facilities designated by the NPPO
- phytosanitary treatments
- consignment tracking while in transit
- physical conditions (refrigeration, pest-proof packaging and/or conveyance)

- NPPO specific seals
- specific carrier's emergency management plans
- transit time or season limits
- documentation in addition to that required by Customs
- inspection of consignment by NPPO.

1.3.3 Other phytosanitary measures

When appropriate phytosanitary measures for consignments in transit are not available or are impossible to apply, the NPPO may require that such consignments are subjected to import requirements which may include prohibition.

If consignments under transit procedures are stored or repackaged in such a way that they present a phytosanitary risk, the NPPO may decide that the consignments should meet import requirements, or subject them to other appropriate phytosanitary measures.

2. Responsibilities of the Contracting Party

The contracting party may develop a transit system for phytosanitary control of consignments in transit with the NPPO and Customs authorities as collaborators. This transit system should ensure that prescribed phytosanitary measures are applied. The transit system is operated by the Customs and NPPO in cooperation as appropriate.

The NPPO has phytosanitary responsibility for the transit system and establishes and implements phytosanitary measures necessary to manage phytosanitary risks, taking into account transit procedures of Customs.

3. Measures for Non-compliance and Emergency Situations

The transit system should include measures for non-compliance or emergency situations, established by the NPPO, in case of accidents in the country of transit (for example unexpected escape of regulated pest from consignment moving in transit) or in cases of non-compliance.

4. Cooperation and Communication

The NPPO may establish cooperation with Customs and other authorities involved in transit and maintain communication with all stakeholders involved in transit.

5. Minimal Impact

Consignments in transit should not be subject to more restrictive measures than those applied to consignments of the same phytosanitary status imported into that country of transit.

6. Review

The NPPO should, as necessary, review the transit system, the types of consignments in transit and the associated phytosanitary risks, in cooperation with appropriate authorities and parties. It should make adjustments as appropriate.

7. Documentation

The transit system should be adequately described and documented and this information should be made available to other countries and interested parties on request.

*Draft ISPM
May 2005
For country consultation*

**INTERNATIONAL STANDARDS FOR
PHYTOSANITARY MEASURES**

PRINCIPLES FOR THE PROTECTION OF PLANT HEALTH

ISPM No. 1 (200-)

Secretariat of the International Plant Protection Convention
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, ----

CONTENTS

INTRODUCTION

SCOPE

REFERENCES

DEFINITIONS

OUTLINE OF REQUIREMENTS

BACKGROUND**PRINCIPLES****1. Basic principles**

- 1.1 Sovereignty
- 1.2 Necessity
- 1.3 Managed risk
- 1.4 Minimal impact
- 1.5 Transparency
- 1.6 Harmonization
- 1.7 Non-discrimination
- 1.8 Technical justification
- 1.9 Cooperation

2. Operational principles and concepts

- 2.1 Establishment of phytosanitary measures
 - 2.1.1 Pest risk analysis
 - 2.1.2 Pest listing
 - 2.1.3 Recognition of pest free areas and areas of low pest prevalence
 - 2.1.4 Equivalence
 - 2.1.5 Modification
 - 2.1.6 Official control related to import requirements
- 2.2 Implementation of phytosanitary measures
 - 2.2.1 Emergency measures
 - 2.2.2 Phytosanitary certification
 - 2.2.3 Phytosanitary integrity and security of consignments
 - 2.2.4 Surveillance
 - 2.2.5 Pest reporting
 - 2.2.6 Timely action
- 2.3 Administration of phytosanitary systems
 - 2.3.1 Provision of a National Plant Protection Organization (NPPO)
 - 2.3.2 Dispute settlement
 - 2.3.3 Administrative delays
 - 2.3.4 Notification of non-compliance
 - 2.3.5 Information exchange

INTRODUCTION

SCOPE

This standard describes principles and concepts for the protection of plant health that are embodied in the New Revised Text of the International Plant Protection Convention, hereafter the IPPC (1997). It covers principles related to the protection of plants, including cultivated and non-cultivated/unmanaged plants and wild flora, principles regarding the application of phytosanitary measures to the international movement of people, commodities and conveyances, as well as other principles and concepts inherent in the objectives of the IPPC (1997). The standard is not intended to alter the IPPC (1997), extend existing obligations, or interpret any other agreement or body of law.

REFERENCES

Agreement on the Application of Sanitary and Phytosanitary Measures, 1994. World Trade Organization, Geneva.
Convention on Biological Diversity, 1992. Convention on Biological Diversity, Montreal.
Glossary of phytosanitary terms, 2004. ISPM No. 5, FAO, Rome.
International Plant Protection Convention, 1997. FAO, Rome.

DEFINITIONS

At its Seventh session in April 2005, the Interim Commission on Phytosanitary Measures adopted recommendations on the publication of ISPMs in a book format (see ICPM-7 report, paragraph 39 and Appendix II). Each book of ISPMs will contain a glossary chapter, i.e. the *Glossary of phytosanitary terms* (ISPM No. 5) in the relevant language.

The "definitions" section in the present ISPM, once integrated into the book, will not contain any definitions but will refer to the Glossary chapter of the book (ISPM No. 5). However, for the purpose of country consultation, this section contains terms or definitions which are new or revised in the present draft standard. Once this standard has been adopted, the new and revised terms and definitions will be transferred into the Glossary chapter of the book (ISPM No. 5), and will not appear in the standard itself.

New terms and definitions:

acceptable level of risk	Level of risk above which a contracting party applies phytosanitary measures
appropriate level of protection	The level of protection deemed appropriate by the Member establishing a sanitary or phytosanitary measure to protect human, animal or plant life or health within its territory [WTO-SPS Agreement, 1994]

OUTLINE OF REQUIREMENTS

This standard describes the following basic principles under the IPPC (1997): sovereignty, necessity, managed risk, minimal impact, transparency, harmonization, non-discrimination, technical justification and cooperation. This standard also describes the operational principles and concepts under the IPPC (1997). They are divided into three categories: establishment of phytosanitary measures, implementation of phytosanitary measures and administration of phytosanitary systems. The operational principles and concepts are: pest risk analysis, pest listing, pest free areas and areas of low pest prevalence, equivalence, modification, official control related to import requirements, emergency measures, phytosanitary certification, phytosanitary integrity and security of consignments, surveillance, timely action, provision of a National Plant Protection Organization, dispute settlement, administrative delays, notification of non-compliance and information exchange.

BACKGROUND

The original version of ISPM No. 1 (*Principles of plant quarantine as related to international trade*) was endorsed as a reference standard by the 27th Session of FAO Conference in 1993. It was developed at the time the Agreement on the Application of Sanitary and Phytosanitary Measures of the World Trade Organization (SPS Agreement) was being negotiated. It helped to clarify some of the elements of the SPS Agreement which were under discussion at that time. The SPS Agreement was adopted in April 1994, and experience has been gained since then on its practical application in relation to phytosanitary measures.

The IPPC (1997) was adopted by FAO Conference in 1997. It includes many changes to the 1979 version of the Convention. Other international conventions, which also directly or indirectly deal with the protection of plants, have come into force in recent years. For example, the Convention on Biological Diversity (CBD) which deals, amongst other things, with the conservation of biological diversity and the sustainable use of its components, came into force in 1993. The revision of the IPPC in 1997, and the advent of these other international agreements, has meant that ISPM No. 1 has required extensive revision.

This standard aims to aid in the understanding of the IPPC (1997) and provides guidance on the fundamental elements in phytosanitary systems. The principles and concepts described below reflect key elements of the IPPC (1997). In some cases, additional guidance on these elements is provided. It should be interpreted in accordance with the full text of the IPPC (1997). Quotations from the IPPC (1997) are indicated in quotation marks and italics.

PRINCIPLES

1. Basic principles

The basic principles should be considered together, as a collective entity, in accordance with the full text of the IPPC (1997).

1.1 Sovereignty

Contracting parties have sovereign authority, in accordance with applicable international agreements, to apply phytosanitary measures to protect plant health within their territories and to determine their appropriate level of protection and acceptable level of risk to plant health.

In relation to phytosanitary measures, the IPPC (1997) provides that:

“With the aim of preventing the introduction and/or spread of regulated pests into their territories, contracting parties shall have sovereign authority to regulate, in accordance with applicable international agreements, the entry of plants and plant products and other regulated articles and, to this end, may:

- a) *prescribe and adopt phytosanitary measures concerning the importation of plants, plant products and other regulated articles, including, for example, inspection, prohibition on importation, and treatment;*
- b) *refuse entry or detain, or require treatment, destruction or removal from the territory of the contracting party, of plants, plant products and other regulated articles or consignments thereof that do not comply with the phytosanitary measures prescribed or adopted under subparagraph (a);*
- c) *prohibit or restrict the movement of regulated pests into their territories;*
- d) *prohibit or restrict the movement of biological control agents and other organisms of phytosanitary concern claimed to be beneficial into their territories.”* (Article VII.1)

In exercising this authority, and *“In order to minimize interference with international trade, ...”* (Article VII.2) each contracting party undertakes to act in conformity with the provisions of Article VII.2 of the IPPC (1997).

1.2 Necessity

Contracting parties may apply phytosanitary measures only where such measures are necessary to protect plant health. In this regard, the IPPC (1997) provides that: *“Contracting parties shall not, under their phytosanitary legislation, take any of the measures specified in [Article VII.1, noted above] unless such measures are made necessary by phytosanitary considerations ...”* (Article VII.2a). Article VI.2 states that *“Contracting parties shall not require phytosanitary measures for non-regulated pests.”*

1.3 Managed risk

Contracting parties should apply phytosanitary measures based on a policy of managed risk, recognizing that risk of the spread and introduction of pests always exists when importing plants, plant products and other regulated articles. Contracting parties “... shall institute only phytosanitary measures that are ... consistent with the pest risk involved ...” (Article VII.2g).

1.4 Minimal impact

Contracting parties should apply phytosanitary measures with minimal impact. In this regard, the IPPC (1997) provides that they “...shall institute only phytosanitary measures that ... represent the least restrictive measures available, and result in the minimum impediment to the international movement of people, commodities and conveyances.” (Article VII.2g)

1.5 Transparency

Contracting parties have a responsibility to make relevant information available to other contracting parties as set forth in the IPPC (1997). In this regard, the IPPC (1997) calls upon contracting parties, for example, to:

- “... immediately upon their adoption, publish and transmit phytosanitary requirements, restrictions and prohibitions to any contracting party or parties that they believe may be directly affected by such measures.” (Article VII.2b)
- “... on request, make available to any contracting party the rationale for phytosanitary requirements, restrictions and prohibitions.” (Article VII.2c)
- “... cooperate in the exchange of information on plant pests ...” (Article VIII.1a).

1.6 Harmonization

Contracting parties should cooperate in the development of harmonized standards for phytosanitary measures. In this regard, the IPPC (1997) provides that “The contracting parties agree to cooperate in the development of international standards ...” (Article X.1). Contracting parties should, without undue delay, “... take into account, as appropriate, international standards when undertaking activities related to this Convention.” (Article X.4).

1.7 Non-discrimination

Contracting parties should, in accordance with the IPPC (1997), apply phytosanitary measures without discrimination among other contracting parties if those other contracting parties can demonstrate that they have the same phytosanitary status and apply identical or equivalent phytosanitary measures.

Contracting parties should also apply phytosanitary measures without discrimination between comparable domestic and international phytosanitary situations.

In these regards, the IPPC (1997) provides that:

- phytosanitary measures “... should not be applied in such a way as to constitute either a means of arbitrary or unjustified discrimination or a disguised restriction, particularly on international trade.” (Preamble)
- contracting parties may require phytosanitary measures, provided that such measures are “... no more stringent than measures applied to the same pests, if present within the territory of the importing contracting party.” (Article VI.1a)

1.8 Technical justification

Contracting parties have a responsibility to technically justify phytosanitary measures “...on the basis of conclusions reached by using an appropriate pest risk analysis or, where applicable, another comparable examination and evaluation of available scientific information.” (Article II.1). In this regard, the IPPC (1997) provides that “Contracting parties shall not, under their phytosanitary legislation, take any of the measures specified in paragraph 1 [of Article VII] unless such measures ... are technically justified.” (Article VII.2a). When the need for phytosanitary measures has been demonstrated, phytosanitary measures which conform to ISPMs are deemed to be technically justified.

1.9 Cooperation

Contracting parties have a responsibility to cooperate with one another to achieve the objectives of the IPPC (1997). In particular, they “...shall cooperate with one another to the fullest practicable extent in achieving the aims of [the] Convention ...” (Article VIII). They “... agree to promote the provision of

technical assistance to contracting parties, especially those that are developing contracting parties ...” (Article XX). Contracting parties should also actively participate in bodies established under the IPPC.

2. Operational principles and concepts

Operational principles and concepts are applied in the implementation of the IPPC (1997) and deal with specific aspects thereof. They can be subdivided into three categories: the establishment of phytosanitary measures; the practical implementation of those phytosanitary measures; and the administration of phytosanitary systems.

2.1 Establishment of phytosanitary measures

2.1.1 Pest risk analysis

Contracting parties should, when performing pest risk analysis, base it on biological or other scientific and economic evidence, following the relevant ISPMs. In doing this, contracting parties should also take account of threats to biodiversity resulting from effects on plants.

Relevant Articles in the IPPC (1997): II and VI.1b.

2.1.2 Pest listing

Contracting parties “... shall, to the best of their ability, establish and update lists of regulated pests ...” (Article VII.2i).

Relevant Articles in the IPPC (1997): VII.2i.

Relevant ISPMs: No. 19 (Guidelines on lists of regulated pests).

2.1.3 Recognition of pest free areas and areas of low pest prevalence

Contracting parties should ensure that their phytosanitary import requirements take into account the status of areas in exporting countries where a regulated pest does not occur or occurs with low prevalence, as determined by using the provisions of the appropriate ISPMs.

Relevant ISPMs: No. 4 (Requirements for the establishment of pest free areas), No. 10 (Requirements for the establishment of pest free places of production and pest free production sites), No. 22 (Requirements for the establishment of areas of low pest prevalence).

2.1.4 Equivalence

Importing contracting parties should accept alternative phytosanitary measures proposed by exporting contracting parties as equivalent when those measures are demonstrated to achieve at least the same level of protection as the existing measures of the importing contracting party, by application, where appropriate, of ISPM No. 24 (*Guidelines for the determination and recognition of equivalence of phytosanitary measures*).

Relevant ISPM: ISPM No. 24 (Guidelines for the determination and recognition of equivalence of phytosanitary measures)

2.1.5 Modification

“Contracting parties shall, as conditions change, and as new facts become available, ensure that phytosanitary measures are promptly modified or removed if found to be unnecessary.” (Article VII.2h). The modifications of phytosanitary measures should be determined on the basis of a new or updated pest risk analysis or relevant scientific information. Contracting parties should not arbitrarily modify phytosanitary measures.

Relevant Articles in the IPPC (1997): VII.2.h.

2.1.6 Official control related to import requirements

Where import requirements are applied for a pest which is present in the territory of the importing contracting party, that contracting party should ensure the establishment of official control of that pest.

Relevant ISPM: No. 5 (Glossary of phytosanitary terms), Supplement No. 1 (Guidelines on the interpretation and application of the concept of official control for regulated pests).

2.2 Implementation of phytosanitary measures

2.2.1 Emergency measures

Contracting parties may adopt emergency actions or emergency measures without full technical justification when faced with a new or unexpected phytosanitary risk.* Emergency measures should be

temporary in their application and should be evaluated by pest risk analysis as soon as possible, to ensure that the continuance of the measure is technically justified.

Relevant Article in the IPPC (1997): VII.6.

* The term emergency actions in Article VII.6 of the IPPC (1997) is interpreted to include emergency measures in the sense of ISPM No. 5.

2.2.2 Phytosanitary certification

“Each contracting party shall make arrangements for phytosanitary certification ...” (Article V). *Contracting parties should exercise due diligence in operating an export certification system and ensuring the accuracy of the declarations contained in phytosanitary certificates.*

Relevant Article in the IPPC: V.

2.2.3 Phytosanitary integrity and security of consignments

Contracting parties, through their NPPO, in order to maintain the integrity of consignments after certification, “... shall ... ensure through appropriate procedures that the phytosanitary security of consignments after certification ... is maintained prior to export.” (Article IV.2g).

Relevant Articles in the IPPC: IV.2g and V.

2.2.4 Surveillance

Contracting parties have a responsibility to collect and record data on pest occurrence and absence to support phytosanitary certification and the technical justification of their phytosanitary measures. In this regard, the IPPC (1997) provides that “*Contracting parties shall, to the best of their ability, conduct surveillance for pests and develop and maintain adequate information on pest status in order to support categorization of pests, and for the development of appropriate phytosanitary measures.*” (Article VII.2j).

Relevant Article in the IPPC (1997): VII.2j and IV.2b.

2.2.5 Pest reporting

Contracting parties “... shall cooperate ... to the fullest practicable extent in ... the reporting of the occurrence, outbreak or spread of pests that may be of immediate or potential danger ...” to other contracting parties. In this respect, they should follow the procedures established by the Commission

Relevant Article in the IPPC (1997): VIII.1a.

2.2.6 Timely action

Contracting parties have a responsibility to ensure that inspection or other phytosanitary procedures required at import “... shall take place as promptly as possible with due regard to ... perishability” of the imported items (Article VII.2e).

Relevant Article in the IPPC (1997): VII.2e.

2.3 Administration of phytosanitary systems

2.3.1 Provision of a National Plant Protection Organization (NPPO)

“Each contracting party shall make provision, to the best of its ability, for an official national plant protection organization with the main responsibilities set out in [Article IV].” (Article IV).

Relevant Article in the IPPC (1997): IV.

2.3.2 Dispute settlement

Contracting parties should be open to consultation regarding their phytosanitary measures, when requested by other contracting parties. If there is a dispute regarding the interpretation or application of the Convention, or if a contracting party considers that an action by another contracting party is in conflict with the obligations of the latter, “... the contracting parties concerned shall consult among themselves as soon as possible with a view to resolving the dispute.” (Article XIII.1). If the dispute cannot be resolved in this way, then the provisions of Article XIII relating to the settlement of disputes or other means of dispute settlement may be applied.

Relevant Article in the IPPC (1997): XIII.

2.3.3 Administrative delays

When a contracting party requests another contracting party to establish or modify phytosanitary import requirements, this request should be considered without undue delay. Requirements, including related actions involved in the development of these requirements, should be performed, established or modified,

as appropriate, also without undue administrative delay. Related actions include, but are not limited to, pest risk analysis, the recognition of pest free areas or the recognition of equivalence.

2.3.4 Notification of non-compliance

Importing contracting parties “... shall, as soon as possible, inform the exporting contracting party concerned...of significant instances of non-compliance with phytosanitary certification.” (Article VII.2f).

Relevant Article in the IPPC (1997): VII.2f.

2.3.5 Information exchange

Contracting parties have a responsibility to provide information specified in the IPPC (1997), as follows:

- Official contact points (Article VIII.2)
- Description of the NPPO and organizational arrangements of plant protection (Article IV.4)
- Phytosanitary requirements, restrictions and prohibitions (Article VII.2b) (including restricted points of entry - Article VII.2d) and their rationale (Article VII.2c)
- List of regulated pests (Article VII.2i)
- Pest reporting, including occurrence, outbreak and spread of pests (Articles IV.2b and VIII.1a)
- Emergency actions (Article VII.6) and non-compliance (Article VII.2f)
- Pest status (Article VII.2j).

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For country consultation*

**INTERNATIONAL STANDARDS FOR
PHYTOSANITARY MEASURES**

DIAGNOSTIC PROTOCOLS FOR REGULATED PESTS

Secretariat of the International Plant Protection Convention
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, ----

CONTENTS

INTRODUCTION

SCOPE

REFERENCES

DEFINITIONS

OUTLINE OF REQUIREMENTS

BACKGROUND**REQUIREMENTS**

- 1. Purpose of diagnostic protocols**
- 2. Content of diagnostic protocols**
- 3. Structure and content of a diagnostic protocol**
 - 3.1 Introduction
 - 3.2 Taxonomic information
 - 3.3 Detection
 - 3.4 Identification
 - 3.5 Records
 - 3.6 Contact points for further information
 - 3.7 Acknowledgements
 - 3.8 References
- 4. Publication of diagnostic protocols**

Appendix 1

Main elements of the procedure for the development of diagnostic protocols

INTRODUCTION

SCOPE

This standard provides specific guidance on the structure and content of diagnostic protocols. It also provides guidance on how these protocols will be initiated, reviewed and published. These protocols describe procedures and methods for the detection and identification of pests that are regulated by contracting parties and relevant for international trade. They are addressed to diagnosticians/diagnostic laboratories performing official tests as part of phytosanitary measures. They provide at least the minimum requirements for reliable diagnosis of the relevant pests.

REFERENCES

- Determination of pest status in an area*, 1998. ISPM No. 8. FAO, Rome.
Export certification system, 1997. ISPM No. 7. FAO, Rome.
Guidelines for a phytosanitary import regulatory system, 2004. ISPM No. 20. FAO, Rome.
Guidelines for surveillance, 1997. ISPM No.6. FAO, Rome.
Guidelines for the notification of non-compliance and emergency action, 2001. ISPM No. 13 FAO, Rome.
International Plant Protection Convention, 1997. FAO, Rome.
Pest reporting, 2002. ISPM No. 17. FAO, Rome.
Requirements for the establishment of pest free areas, 1996. ISPM No. 4. FAO, Rome.

DEFINITIONS

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New terms and definitions

pest detection	The process of finding an organism, either in symptomatic or asymptomatic material.
pest diagnosis	The process of pest detection and pest identification
pest identification	The process of ascertaining the taxonomic identity of an organism.

OUTLINE OF REQUIREMENTS

Diagnostic protocols provide guidance on the diagnosis of specified pests. Information relevant for diagnosis is provided on the specified pest, its taxonomic status and the methods to detect and identify it. Diagnostic protocols contain the minimum requirements for reliable diagnosis of the specified pest and provide flexibility to ensure the methods are appropriate for the range of circumstances of use.

Diagnostic protocols are intended to be used by diagnosticians and are subject to review and amendment to take into account new developments in pest diagnosis. Diagnostic protocols for specific pests are included as annexes to this standard.

BACKGROUND

The purpose of the International Plant Protection Convention (IPPC, 1997) is to secure common and effective action to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control (Article I.1). Proper pest detection and pest identification is crucial for the appropriate application of these measures (see for example: ISPM No. 4: *Requirements for the establishment of pest free areas*; ISPM No. 6: *Guidelines for surveillance*; ISPM No. 7: *Export certification system*; ISPM No. 9: *Guidelines for pest eradication programmes*; and ISPM No 20: *Guidelines for a phytosanitary import regulatory system*). In particular, contracting parties need adequate diagnostic procedures for determination of pest status and pest reporting (ISPM No. 8: *Determination of pest status in an area*; ISPM No. 17: *Pest reporting*), and the diagnosis of pests in imported consignments (ISPM No. 13: *Guidelines for the notification of non-compliance and emergency action*).

NPPOs have produced diagnostic protocols for regulated pests in order to adequately fulfil responsibilities according to Article IV of the IPPC (1997), in particular surveillance, import inspections and export certification. In response to the need for regional harmonization, several Regional Plant Protection Organizations (RPPOs) have developed a significant number of regional diagnostic standards. The Interim Commission on Phytosanitary Measures at its Sixth session subsequently recognized that there was a need for diagnostic protocols also on a global scale within the framework of the IPPC and approved the formation of a Technical Panel on diagnostic protocols for that purpose.

Harmonized diagnostic protocols may support efficient phytosanitary measures in a wide range of circumstances and it is expected that the application of harmonized diagnostic protocols will enhance the mutual recognition of test results and may therefore facilitate trade. These protocols should provide an opportunity for sharing knowledge and should also aid the development of expertise and technical cooperation.

REQUIREMENTS

1. Purpose of diagnostic protocols

Diagnostic protocols may be used in different circumstances that may require test methods with different characteristics. These circumstances may include:

- routine diagnosis of a pest widely established in a country
- general surveillance for pest status
- testing of material for compliance with certification schemes
- surveillance for latent infection by pests
- surveillance as part of an eradication scheme
- detection of a pest in an area where it is not known to occur
- cases where a laboratory detects a pest for the first time
- detection of a pest in a consignment originating in a country where the pest is declared to be absent.

In circumstances such as routine diagnosis, the speed and cost of a test method may be more relevant than sensitivity or specificity, whereas the first detection of a pest in a laboratory or area may require methods with a high level of specificity and reproducibility.

Diagnostic protocols provide the minimum requirements, which may be a single method or a combination of methods, for reliable diagnosis of the relevant pests. Diagnostic protocols also provide additional methods to cover the full range of circumstances for which a diagnostic protocol may be used. The level of sensitivity, specificity and reproducibility of each method is indicated. NPPOs may use these criteria to determine the method or combination of methods that are appropriate for the relevant circumstances. Diagnostic protocols may also be useful in accreditation of laboratories.

2. Content of Diagnostic Protocols

Each protocol contains the methods and guidance necessary for the named pest(s) to be detected and positively identified by an expert (i.e. an entomologist, mycologist, virologist, etc.) or competent staff that is specifically trained.¹

¹ The following general provisions apply to all diagnostic protocols:

- Laboratory tests may involve the use of chemicals or apparatus which present a certain hazard. In all cases, local safety procedures should be strictly followed;
- Use of names of chemicals or equipment in these diagnostic protocols implies no approval of them to the exclusion of others that may also be suitable;
- Laboratory procedures presented in the protocols may be adjusted to the standards of individual laboratories, provided that they are adequately validated or that proper positive and negative controls are included.

The methods included in diagnostic protocols are selected on the basis of their sensitivity, specificity and reproducibility. In addition, the availability of equipment, the expertise required for these methods and their practicality (for example ease of use, speed and cost) are taken into account when selecting methods for inclusion in the diagnostic protocol. Each diagnostic protocol usually describes more than one method to take into account the capabilities of laboratories and the situations for which the methods are applied. Such situations include diagnosis of different developmental stages of organisms, which require different methodologies, as well as the degree of certainty required by the NPPO.

For some purposes a single method may be sufficient, for others a combination of methods may be necessary. This applies both to the minimum requirements for a diagnosis and where additional requirements are necessary (such as where a high degree of certainty in the diagnosis is required).

Each protocol contains introductory information, information on the taxonomic identity of the pest, methods for detection and identification of the pest, records to be kept, and references to appropriate scientific publications. In many cases a wide range of supplementary information is available, for example on geographical distribution of the pest and host lists, which may support diagnosis, but diagnostic protocols focus on the critical methods and procedures for pest diagnosis.

The aspects of quality assurance that are required by diagnostic protocols (such as inclusion of positive and negative controls) are specifically indicated in the relevant methods in the protocol.

The main elements of the procedure for the development of diagnostic protocols are presented in Appendix 1.

3. Structure and Content of a Diagnostic Protocol

Diagnostic protocols are arranged according to the following sections:

- Introduction
- Taxonomic information
- Detection
- Identification
- Records
- Contact points for further information
- Acknowledgements
- References.

3.1 Introduction

Brief information is provided on the pest, its appearance, relationship with other organisms, host range (in general), effects on hosts, geographical distribution (in general) and vectors, where appropriate.

3.2 Taxonomic information

This section provides information on the taxonomy of the pest involved and includes:

- name (correct scientific name and authority (for fungi, teleomorph name))
 - synonyms (including former names)
 - anamorph name of fungi (including synonyms)
 - acronym of viruses.
- taxonomic position (overview of the relevant taxonomic hierarchy).

3.3 Detection

This section of the diagnostic protocol provides information and guidance on:

- the plants, plant products or other articles capable of harbouring the pest
- the signs and/or symptoms associated with the pest (characteristic features, differences or similarities with signs and/or symptoms from other causes), including illustrations, where appropriate
- the part(s) of the plant, plant products or other articles on/in which it may be found
- the developmental stages of the pest that may be encountered, together with their likely concentration and distribution on/in the plants/plant products or other articles
- the likely occurrence of the pest associated with developmental stages of the host(s) and seasonality
- methods for discovering the pest in the commodity (e.g. visual, hand lens)

- methods for extracting, recovering, and collecting the pest from the plants, plant products or other articles or for demonstrating the presence of the pest in the plants, plant products or other articles. This may include methods for demonstrating the presence of the pest in asymptomatic plant material or other materials (e.g. soil or water), such as ELISA tests or culturing on selective media.

For all the methods included in the section, information is provided on their sensitivity, specificity and reproducibility. Where appropriate, guidance is provided on positive and negative controls and reference material to be included in tests. Guidance is also provided on resolving possible confusion with similar signs and/or symptoms due to other causes.

3.4 Identification

This section provides information and guidance on methods that either singly or in combination lead to the identification of the pest. When several methods are mentioned, their advantages/disadvantages are given as well as the extent to which the methods or combinations of methods are equivalent. If several methods are needed to identify the pest a flow diagram may be presented as a figure. Additionally, a flow diagram may be presented if many alternative methods are included.

In cases where morphological methods can be reliably used but appropriate molecular methods have been developed, the latter may be presented as alternative or supplementary methods.

For all the methods included in the section, information is provided on their sensitivity, specificity and reproducibility. Where appropriate, guidance is provided on positive and negative controls and reference material to be included in tests. Guidance is also provided on resolving possible confusion with similar and related species or taxa.

Diagnostic protocols provide guidance on the criteria for the determination of a positive or negative result for each method.

Two main types of methodology are included in diagnostic protocols, methodologies based on morphological characteristics of a pest and those based on biochemical and molecular properties. Morphological characteristics may be investigated directly or may only be examined after culturing or isolation of the pest. This may also be required for biochemical and/or molecular assays. Where culturing or isolation procedures are necessary components of methods, details are provided.

Where appropriate, methods for isolation of pests from asymptomatic plants or plant products (such as tests for latent infection) are given, as well as methods for extraction, recovery and collection of pests from plant or other material. In these cases, methods are also provided for direct identification of pests using biochemical or molecular tests on asymptomatic material.

For morphological identifications, details are provided, as appropriate, on:

- methods to prepare, mount and examine the pest (such as for light microscopy and electron microscopy)
- identification keys (to family, genus, species)
- descriptions of the morphology of the pest or of its colonies, including illustrations of diagnostic characters, and an indication of any difficulties in seeing particular structures
- comparison with similar or related species
- relevant reference specimens or cultures

For biochemical or molecular identifications, each method (e.g. serological methods, BIOLOG, electrophoresis, PCR, TaqMan, RFLP, sequencing) is described separately in sufficient detail (including equipment, reagents and consumables) to be able to perform the test. Where appropriate, reference may be made to methodology described in other diagnostic protocols annexed to this standard.

Cases where the inclusion of appropriate controls, including reference material, is essential (e.g. ELISA) are indicated. When such materials are not available, supplementary tests, preferably based on different identification principles, may increase the certainty of the identification. Ideally, in such cases, a sample, specimen or, where appropriate, an image should be sent to another laboratory with experience in diagnosis of the suspected pest and possessing the required control or reference materials.

Methods for quick, presumptive indications of identity (which will later need to be confirmed) may also be included in diagnostic protocols.

3.5 Records

This section provides information on the records that should be kept:

- scientific name of pest identified
- code or reference number of the sample (for traceability)
- nature of the infested material including scientific name of host where applicable
- origin of the infested material
- description of signs or symptoms (including photographs where relevant)
- methods, including controls, used in the diagnosis and the results obtained with each method
- for morphological methods, measurements, drawings or photographs of the diagnostic features (where relevant), if applicable the developmental stage
- for biochemical and molecular methods, documentation of test results such as photographs of diagnostic gels or ELISA printouts of results, on which the diagnosis was based
- where appropriate, the magnitude of any infestation (how many individual pests found, how much damaged tissue)
- the name of the laboratory and, where appropriate, the name of the person(s) responsible for and/or who performed the diagnosis
- date of diagnostic identification.

Culture(s) of the pest, preserved/mounted specimens or test materials (e.g. photograph of gels, ELISA plate printout results) should be retained in particular in cases of non-compliance (ISPM No. 13): *Guidelines for the notification of non-compliance and emergency action*) and where pests are found for the first time. Additional items may be required under other ISPMs such as ISPM No. 8 (*Determination of pest status in an area*).

3.6 Contact points for further information

Contact details of institutes or individuals with particular expertise on the pest(s) are provided, which may be consulted regarding any questions or for confirmatory diagnosis.

3.7 Acknowledgements

The name and address of the experts who wrote the first draft of the diagnostic protocol are given, together with those of any others who made major contributions.

3.8 References

References to scientific publications and/or published laboratory manuals are given.

4. Publication of Diagnostic Protocols

Diagnostic protocols are published as annexes to this ISPM and thus are individual publications under the IPPC framework with a specific publication and/or revision date. If appropriate, they may also form part of other ISPMs. The process of their adoption includes stringent review by internationally acknowledged scientists/experts for the relevant discipline.

An index to the annexes is provided as Appendix 2 [Appendix 2 will be added to the standard when protocols have been approved].

APPENDIX 1

**MAIN ELEMENTS OF THE PROCEDURE FOR THE DEVELOPMENT
OF DIAGNOSTIC PROTOCOLS****1. Production of Diagnostic Protocols**

An expert will be commissioned by the Technical Panel on Diagnostic Protocols (TPDP) to lead the development of a diagnostic protocol by adapting diagnostic protocols that have already been approved by RPPOs or other international organizations if they exist, or by developing a new diagnostic protocol. The diagnostic protocol will be produced and reviewed by a small group of experts selected by the TPDP and will then be submitted to the TPDP which, once satisfied with it, will submit it to the standard setting process.

2. Review of Existing Diagnostic Protocols

TPDP members will review the diagnostic protocols in their discipline on an annual basis. A request for a revision to a diagnostic protocol may also be submitted to a member of the TPDP or to the IPPC Secretariat (ippc@fao.org), who will in turn forward it to the TPDP.

The TPDP will evaluate the request, identify those diagnostic protocols that require revision and oversee their revision. New methods should be at least as good as existing methods or provide some other advantage. Appropriate evidence should be provided to support any claims.

3. Requests for New Diagnostic Protocols

Requests for new diagnostic protocols, in addition to those identified in the work programme of the TPDP, should be sent to the IPPC Secretariat using a form for topics and priorities for standards, by 30 July of each year.

*Draft ISPM
May 2005
For country consultation*

**INTERNATIONAL STANDARDS FOR
PHYTOSANITARY MEASURES**

***REQUIREMENTS FOR THE SUBMISSION OF PHYTOSANITARY
TREATMENTS***

Secretariat of the International Plant Protection Convention
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, ----

CONTENTS

INTRODUCTION

SCOPE

REFERENCES

DEFINITIONS

OUTLINE OF REQUIREMENTS

BACKGROUND**REQUIREMENTS****1. Criteria for Treatments**

1.1 General requirements

1.1.1 Efficacy data from laboratory or controlled experiments

1.1.2 Efficacy data on the target pest(s) under practical conditions

1.2 Feasibility and applicability

2. Requirements for Submission of a Proposal for a Phytosanitary Treatment

2.1 General considerations

2.2 Summary information and contact details

2.3 Description of the phytosanitary treatment

2.4 Treatment targets

2.5 Efficacy data in support of the submission

2.5.1 Efficacy data on the target pest(s) under laboratory or controlled experiments

2.5.2 Efficacy data on the target pest(s) under practical conditions.

2.6 Information on technical and commercial feasibility

3. Evaluation of Submissions**Appendix 1**

Cover page for a submission of a phytosanitary treatment

Appendix 2

Operational procedures for prioritizing and evaluating submitted information on phytosanitary treatments

INTRODUCTION

SCOPE

This standard describes the criteria for a phytosanitary treatment and the requirements for submitting a proposed phytosanitary treatment for inclusion in the ISPM on phytosanitary treatments [under development].

Treatments considered in this standard are applied to commodities or to regulated articles.

Pesticide registration is the responsibility of each contracting party and is not part of this standard.

REFERENCES

Glossary of phytosanitary terms, 2004. ISPM No. 5, FAO, Rome.

International Plant Protection Convention, 1997. FAO, Rome.

DEFINITIONS

At its Seventh session in April 2005, the Interim Commission on Phytosanitary Measures adopted recommendations on the publication of ISPMs in a book format (see ICPM-7 report, paragraph 39 and Appendix II). Each book of ISPMs will contain a glossary chapter, i.e. the *Glossary of phytosanitary terms* (ISPM No. 5) in the relevant language.

The "definitions" section in the present ISPM, once integrated into the book, will not contain any definitions but will refer to the Glossary chapter of the book (ISPM No. 5). However, for the purpose of country consultation, this section contains terms or definitions which are new or revised in the present draft standard. Once this standard has been adopted, the new and revised terms and definitions will be transferred into the Glossary chapter of the book (ISPM No. 5), and will not appear in the standard itself.

New term and definition:

treatment schedule

The elements of a treatment that are critical to achieving the stated efficacy.
The most critical elements are dose, time and temperature.

OUTLINE OF REQUIREMENTS

Phytosanitary treatments may be required by contracting parties as phytosanitary measures to prevent the spread and introduction of pests of plants and plant products.

Treatments should fulfil certain criteria in relation to their efficacy, feasibility and applicability.

National Plant Protection Organizations (NPPOs) or Regional Plant Protection Organizations (RPPOs) submit a proposed treatment for inclusion in the ISPM on phytosanitary treatments [under development] by providing information on the treatment, pest(s) and commodity(ies) or regulated articles concerned. The submission should include efficacy data on the treatment under laboratory or controlled experimental conditions, and also under practical conditions. The level of efficacy of the treatment should be stated in the submission and should be applicable to use of the treatment internationally. Information on the technical and commercial feasibility of the treatment should be provided.

Submissions will be evaluated by the Technical Panel on Phytosanitary Treatments to determine whether the treatment is of use internationally. Once adopted, phytosanitary treatments will be published in the ISPM on phytosanitary treatments [under development] and in a treatments database on the International Phytosanitary Portal (www.ippc.int).

BACKGROUND

The purpose of the IPPC is "... to prevent the spread and introduction of pests of plants and plant products, and to promote appropriate measures for their control ..." (Article I.1 of the IPPC, 1997). One phytosanitary measure used by contracting parties to prevent the introduction and spread of pests is to require or to apply phytosanitary treatments to commodities and regulated articles.

Article VII.1 of the IPPC 1997 states: "... contracting parties shall have sovereign authority to regulate, in accordance with applicable international agreements, the entry of plants and plant products and other regulated articles and, to this end, may:

- a) *prescribe and adopt phytosanitary measures concerning the importation of plants, plant products and other regulated articles, including, for example, inspection, prohibition on importation, and treatment.*"

Phytosanitary measures required by an importing contracting party should be technically justified (Article VII.2.a of the IPPC, 1997). The overall aim of the process described in this standard is for data submitted by National Plant Protection Organizations (NPPO) or Regional Plant Protection Organizations (RPPOs) to be evaluated by the Technical Panel on Phytosanitary Treatments for their efficacy, and technical and commercial feasibility. Suitable treatments will be recommended for adoption as international phytosanitary treatments and for inclusion in the ISPM on phytosanitary treatments [under development]. Such treatments may be utilized where appropriate without further technical justification.

Contracting parties should take into account other issues when applying phytosanitary treatments, such as the effects on human health and safety, animal health and the environment (see the preamble and Article I.1 of the IPPC, 1997). Effects on the quality of the commodity should also be considered.

REQUIREMENTS

1. Criteria for Treatments

1.1 General requirements

The following requirements should be met:

- the treatment should be effective in killing, inactivating, or removing of target pests, rendering pests infertile or devitalizing pests associated with the target commodity(ies) or regulated articles.
- the data should be based on statistically sound methods or on established and accepted international practice and, where possible, it should have been published in a peer-reviewed journal.
- the level of efficacy should be stated (quantified or expressed statistically). Where statistical data is unavailable, other evidence that supports the efficacy (i.e. historical and/or practical information/experience) should be provided.
- the way the treatment can be used effectively in practice (e.g. as part of a systems approach) should be stated.
- the treatment should be applicable for use in international trade or other movement, e.g. for research purposes.

1.1.1 Efficacy data from laboratory or controlled experiments

The methods and materials utilized in the experiments should be suitable for the proposed use of the treatment at the stated efficacy. This includes the following:

- identity of pest used in the trials (e.g. strain, biotype, physiological race and life stage, laboratory or field strain), including conditions under which they are cultured/reared
- target commodity/regulated article (e.g. maturity, variety)
- experimental facilities and equipment
- methodology to measure the effectiveness of the treatment (for example, whether mortality is the proper parameter or whether the end-point mortality was assessed at the correct time)
- monitoring of critical parameters (such as dose, temperature, relative humidity).

1.1.2 Efficacy data on the target pest(s) under practical conditions

The proposed treatment developed under laboratory conditions should be validated by testing under practical or simulated practical conditions. Results of these tests should confirm that the application of the treatment schedule achieves the stated efficacy under conditions in which the treatment will be used.

1.2 Feasibility and applicability

The proposed phytosanitary treatment should be feasible and applicable internationally. Factors that may affect the feasibility and applicability include commercial relevance, technical viability, human health and safety, commodity quality and environmental impact.

Treatment schedules should adequately describe the method for applying the treatment in a commercial environment.

2. Requirements for Submission of a Proposal for a Phytosanitary Treatment

A proposal justifying a phytosanitary treatment for inclusion in the ISPM on phytosanitary treatments should be submitted by an NPPO or RPPO to the IPPC Secretariat according to the requirements in this section. These requirements provide guidance for the submission of data on treatments that have already been developed or for development of new treatments.

2.1 General considerations

The NPPO or RPPO should ensure that the experimental design provides a final proposed phytosanitary treatment with a degree of efficacy appropriate for international use. It is recommended that the results of the research in support of the proposed phytosanitary treatment should be peer reviewed and approved prior to submission by the NPPO or the relevant RPPO.

The data supporting the treatment should be presented clearly and systematically, preferably in accordance with the requirements in the following sections.

2.2 Summary information and contact details

The submission should provide a summary of the treatment, target pest(s) and commodity(ies) (see Appendix 1). Where a treatment is intended to be of relevance to an existing or proposed ISPM, this should be stated in the summary. The NPPO or RPPO should designate a person to be responsible for the submission and their contact details should be provided.

2.3 Description of the phytosanitary treatment

The submission should contain a description of the treatment, including the type of treatment, treatment schedule and conditions associated with the treatment (for example, duration, temperature, active ingredient and formulation, dose, delivery method and, where appropriate, pre/post handling conditions).

2.4 Treatment targets

The targets of the treatment should be stated, including:

- the identity of the target pest(s) (taxonomic classification including strains, biotypes and, where appropriate, life stage(s))
- the identity of the commodity or regulated article for which the treatment is proposed, may include where appropriate:
 - taxonomic classification
 - description of commodity
 - state of preservation/processing or maturity (e.g. fruit, plants for planting, part of plant, wood)
 - cultivar or variety
 - description of regulated article (e.g. ship, container, soil, machinery, wood).

2.5 Efficacy data in support of the submission

The source of all efficacy data provided in the submission (published or unpublished) should be cited.

2.5.1 Efficacy data on the target pest(s) under laboratory or controlled experiments

The pest life-cycle stage for which the treatment is proposed should be specified. Usually, the most resistant stage of the pest(s) is the stage for which a treatment is proposed and established. However, practical considerations should be considered, as well as pest control strategies aimed at exploiting vulnerable or specific stages of a pest.

If efficacy data is submitted for a life-cycle stage that is not considered to be the most resistant, rationale for this (e.g. a summary of the appropriate pest control strategy) should be provided. The

efficacy data provided should specify the level of confidence supporting efficacy claims made for treatment of the specified life-cycle stage.

Where possible, data should be presented on how the effective dose/treatment was determined to demonstrate the range of efficacy of the proposed treatment (e.g. dose/efficacy curves). Treatments can only be adopted for the conditions under which they were tested. Additional information should be provided to support any extrapolation if the scope of a treatment is to be extended (e.g. extending the range of temperatures or the inclusion of other varieties).

The data should include detailed information on the following elements:

- identity of the pest to the level appropriate (e.g. strain, biotype, physiological race and life stage, laboratory or field strain), including conditions under which they are cultured/reared.
- biological traits of the pest relevant to the treatment (e.g. viability, genetic variability, weight, developmental time, fecundity, freedom from disease or parasites)
- commodity type/cultivar (where varietal differences impact on treatment efficacy, data should be provided for all varieties under consideration)
- conditions of commodity, for example:
 - whether the commodity was free from disease or pesticide residue
 - size, shape, weight, stage of maturity, quality, etc.
 - infested at a susceptible stage.
- method of natural/artificial infestation
- level of confidence provided by the laboratory testing, method of statistical analysis, and the data supporting that calculation (e.g. number of subjects treated, number of replicate tests, controls)
- experimental design (e.g. randomized complete block design)
- experimental conditions (e.g. temperature, relative humidity, diurnal cycle)
- monitoring of critical parameters (e.g. dose, temperature, relative humidity)
- how the effectiveness of the treatment was determined (e.g. mortality, sterility).

The data may also include detailed information where required on:

- determination of most tolerant species/life stage
- determination of efficacy over a range of critical parameters, such as exposure time, dose, temperature, humidity and water content.

2.5.2 Efficacy data on the target pest(s) under practical conditions.

Data may be presented from preliminary tests to refine the treatment schedule to establish the effective dose (e.g. temperature, chemical, irradiation) under practical conditions.

In some cases the method of achieving the effective dose will be different from the method established under laboratory conditions. Data should be provided that supports any extrapolation of laboratory results.

Where treatment specifications differ in practical trials, the test protocol and the number of subjects treated should be indicated.

The same data requirements as listed in section 2.5.1 should also be provided for these tests. Other data which is required is listed below:

- factors that affect the performance of the treatment (packaging, packing method, stacking, timing of treatments (pre/post packaging or processing, in transit, on arrival)). The circumstances of the treatment should be stated, for example the efficacy of a treatment may be affected by packaging and data should be provided to support all the circumstances that are applicable.
- monitoring of critical parameters (dose, temperature, relative humidity). For example:
 - the number and placement of gas sampling lines (fumigation)
 - the number and placement of temperature/humidity sensors.

In addition, any special procedures that affect the success of the treatment (e.g. to maintain the quality of the commodity) should also be included.

2.6 Information on technical and commercial feasibility

Information should be provided to support the proposed phytosanitary treatment including such items as:

- feasibility of carrying out the proposed phytosanitary treatment at a global level (includes ease of use, risks to operators, technical complexity)
- extent of existing use by NPPOs
- availability of expertise needed to apply the proposed phytosanitary treatment globally
- versatility of the proposed phytosanitary treatment (e.g. application to a wide range of countries/pests/commodities)
- the degree to which the proposed phytosanitary treatment complements other treatments or procedures (e.g. potential for the treatment to be used as part of a systems approach for one pest or to complement treatments for other pests)
- feasibility of having the proposed phytosanitary treatment accepted at a global level
- consideration of potential non-target effects.

3. Evaluation of Submissions

The Technical Panel on Phytosanitary Treatments will evaluate the submissions for their suitability of proposed treatments for inclusion in the ISPM on phytosanitary treatments [under development] and the treatment database on the International Phytosanitary Portal (IPP, <https://www.ippc.int>). See Appendix 2 for guidance on the evaluation process.

APPENDIX 1

COVER PAGE FOR A SUBMISSION OF A PHYTOSANITARY TREATMENT

The following summary information should be provided (see section 2.2). This cover page is designed to assist the evaluation process. The information as required in sections 2.3 to 2.6 should be appended to this cover page. Text in brackets is given for explanatory purposes.

Proposed name of treatment:		<input type="checkbox"/>	Indicate ISPM number in the box if submission is applicable to an ISPM
Name of NPPO or RPPO:			
Name of person responsible for the treatment:			
Position and/or title:			
Mailing address:			
Phone:			
Fax:			
Email:			
Treatment description			
<u>Treatment name</u> (provide enough detail to identify the treatment; for example, cold treatment of navel oranges for Mediterranean fruit fly):			
<u>Treatment type</u> (for example, chemical, irradiation, heat, cold):			
<u>Target commodity(ies)/regulated article(s):</u>			
<u>Target pest(s):</u>			
<u>Schedule</u> (include brief description such as active ingredient, dose, time and temperature):			
Reason for submission: (describe why the standard is needed; where a treatment is widely used, include the countries that approve it)			

Send submissions to:

E-mail: ippc@fao.org **Fax:** (+39) 06 5705 4819

Mail: IPPC Secretariat (AGPP), Food and Agriculture Organization of the UN,
Viale delle Terme di Caracalla, 00100 Rome, Italy

APPENDIX 2

OPERATIONAL PROCEDURES FOR PRIORITIZING AND EVALUATING SUBMITTED INFORMATION ON PHYTOSANITARY TREATMENTS**1. Priorities**

Factors for determining priorities include:

- use of the proposed phytosanitary treatment as an alternative treatment to methyl bromide
- value of trade affected by proposed phytosanitary treatment
- relevance and value to a standard under development requiring phytosanitary treatment(s)
- frequency with which a proposed phytosanitary treatment is linked to a trade issue (e.g. disputes or need for repeated bilateral discussions)
- relevance and utility to developing countries
- emergency need for the proposed phytosanitary treatment
- long term benefits of the proposed phytosanitary treatment (e.g. chemicals likely to be banned or withdrawn would be low priority)
- issues associated with deferring or rejecting the proposed phytosanitary treatment.

2. Evaluations of Submissions

Submissions will be considered by the Technical Panel on Phytosanitary Treatments only when the following information is complete (see section 2):

- summary information and contact details
- description of the treatment
- treatment targets
- efficacy data in support of the submission
- information on technical and commercial feasibility.

The Technical Panel on Phytosanitary Treatments will exercise due respect for confidentiality where sensitive information is provided by the applicant.

In evaluating submissions, the Technical Panel on Phytosanitary Treatments will consider the following criteria:

- the experience or expertise in the subject area of the laboratory, organization and/or scientist(s) involved in producing the data
- whether the data was published. More weight may be given to data that was published in international peer-reviewed journals.
- the availability of experts to evaluate the proposed phytosanitary treatment
- whether researchers utilized a quality assurance or accreditation program in the development and/or testing of the proposed phytosanitary treatment.

Treatments will only be approved for the conditions under which they were tested, unless data is presented to support extrapolation (for example to apply the treatment to a range of pest species or commodities).

3. Outcome of Evaluation

Once a submission has been evaluated and the treatment has been found to meet the criteria for adoption internationally, it will be recommended as an international treatment. After adoption by the ICPM, the treatment will be incorporated into the ISPM on phytosanitary treatments [under development] and the treatment database on the International Phytosanitary Portal (IPP, <http://www.ippc.int>).

If the submission fails to meet the criteria for adoption internationally, the reason(s) will be communicated to the contact identified on the submission. There may be a recommendation to provide additional information or to initiate further work (e.g. research, field testing, analysis).

*Draft ISPM
May 2005
For country consultation*

**INTERNATIONAL STANDARDS FOR
PHYTOSANITARY MEASURES**

***REQUIREMENTS FOR THE ESTABLISHMENT AND MAINTENANCE OF
PEST FREE AREAS FOR TEPHRITID FRUIT FLIES***

Secretariat of the International Plant Protection Convention
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, ----

INTRODUCTION

SCOPE

REFERENCES

DEFINITIONS

OUTLINE OF REQUIREMENTS

BACKGROUND**REQUIREMENTS****1. General Requirements**

- 1.1 Buffer zone
- 1.2 Public awareness
- 1.3 Documentation and review
- 1.4 Record keeping
- 1.5 Quality assurance programme

2. Specific Requirements

- 2.1 Determination of the FF-PFA
- 2.2 Establishment of the FF-PFA
 - 2.2.1 Surveillance activities for establishment
 - 2.2.1.1 Trapping procedures
 - 2.2.1.2 Fruit sampling procedures
 - 2.2.2 Regulatory controls on the movement of host material or regulated articles
 - 2.2.3 Additional technical information for establishment
- 2.3 Verification and declaration of pest freedom
- 2.4 Maintenance of the FF-PFA
 - 2.4.1 Surveillance for maintenance of the FF-PFA
 - 2.4.2 Regulatory controls on the movement of host material and regulated articles
 - 2.4.3 Corrective actions (including response to an outbreak)
- 2.5 Suspension, termination and reinstatement of a FF-PFA
 - 2.5.1 Suspension and termination
 - 2.5.2 Reinstatement

ANNEX 1

Guidelines on trapping procedures

ANNEX 2

Guidelines for fruit sampling

ANNEX 3

Guidelines on corrective action plans

APPENDIX 1

Most important fruit fly pests

OUTLINE OF REQUIREMENTS

The general requirements to be considered in preparing to set up a fruit fly-pest free area (FF-PFA) include: consideration of the possible need for a buffer zone; the preparation of a public awareness programme; and the management elements of the system (documentation and review systems, record keeping and a quality assurance programme).

The major elements of the FF-PFA are: the determination of the FF-PFA; the establishment of the FF-PFA; the verification and declaration of pest freedom; and the maintenance of the FF-PFA. These elements include the surveillance activities of trapping and fruit sampling and regulatory controls on the movement of host material or regulated articles. Detailed guidance on surveillance activities is provided in Annexes 1 and 2.

Additional requirements include: corrective action planning, the suspension, termination and reinstatement (if possible) of the FF-PFA and the establishment of specific trading arrangements if required. Corrective action planning is described in Annex 3.

BACKGROUND

Fruit flies are a very important group of pests for many countries due to their potential to cause damage in fruits and to restrict international market for these products. The high probability of introduction and establishment of these pests associated with a wide range of hosts results in restrictions for many importing countries to accept fruits from areas in which these pests are established. For these reasons, there is a need for an ISPM that provides specific guidance for the establishment and maintenance of pest free areas for fruit flies.

ISPM No. 4 (*Requirements for the establishment of pest free areas*) provides general guidance on the establishment of pest free areas. A need for additional guidance on establishment and maintenance of pest free areas for fruit flies (fruit fly-pest free areas, FF-PFA) was recognized. This specific standard describes the requirements for FF-PFAs. The target pests for this standard include insects of the order Diptera, family Tephritidae, of the genera *Anastrepha*, *Bactrocera*, *Ceratitis*, *Dacus*, *Rhagoletis* and *Toxotrypana*. See Appendix 1 for the most important fruit fly pests.

The establishment of a FF-PFA and its recognition by trading partners implies that no other phytosanitary measures are required for the target species of fruit fly for host commodities from the PFA.

This standard only refers to pest free areas for fruit flies and does not cover pest free places of production or pest free production sites for fruit flies (see ISPM No. 10: *Requirements for the establishment of pest free places of production and pest free production sites*).

REQUIREMENTS

1. General Requirements

A pest free area is “an area in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained” (see ISPM No. 5). Areas may be naturally free from fruit flies (though fruit flies have the potential to establish there) or may be made free by an eradication programme (see ISPM No. 9: *Guidelines for pest eradication programmes*). ISPM No. 4 (*Requirements for the establishment of pest free areas*) describes different types of pest free areas. In particular it distinguishes between freedom for an entire country and freedom for part of a country.

In cases where the fruit flies concerned are known to be absent from an area such as an entire country or several countries, general surveillance in accordance with section 3.1.2 of ISPM No. 8 (*Determination of pest status in an area*), where appropriate in combination with the implementation of import requirements against the introduction of the relevant fruit fly species into the area, is normally sufficient to establish and maintain the area pest free.

In cases where the PFA is situated near or within an infested area, official control and specific procedures as further described in this standard are required for its establishment and maintenance. The decision to establish such a FF-PFA is made by the NPPO based on technical and socio-economic feasibility. The technical factors include components such as: pest population levels, isolation, climate, geography and availability of methods for pest eradication.

All the procedures for the establishment, verification of pest freedom and maintenance of such FF-PFA should form part of an official control programme. “As this type of PFA is likely to involve an agreement between trade partners, its implementation would need to be reviewed and evaluated by the NPPO of the importing country.” (ISPM No. 4: *Requirements for the establishment of pest free areas*).

1.1 Buffer zone

In areas where geographic isolation is not considered adequate to prevent reinfestation of a pest free area or where there are no other means of preventing fruit fly movement to the PFA, a buffer zone should be established. Factors which should be considered in the establishment of a buffer zone include:

- pest suppression techniques which may be used to reduce the fruit fly population, including selective insecticide-bait, spraying, sterile insect technique, male annihilation technique, biological control, mechanical control, etc.
- host availability, cropping systems, natural vegetation, climatic conditions
- the geography of the area
- capacity for natural spread.

1.2 Public awareness

An important factor in the establishment and maintenance of FF-PFAs is the support and participation of the FF-PFA community, including parties with direct and indirect interests. The PFA status can be maintained only if there is no introduction of infested material. The public and stakeholders should be informed of the importance of establishing and maintaining the pest free status of the area. This helps to achieve compliance with the phytosanitary measures for the FF-PFA. The public awareness and phytosanitary education programme may include:

- permanent or random roadblocks

- posting signs at entry points and transit corridors
- disposal bins
- brochures
- public information programmes
- systems to allow fruit movement
- penalties for non-compliance.

1.3 Documentation and review

The procedures for the FF-PFA should be adequately documented. They should be reviewed and updated regularly. If required, corrective measures should be implemented and documented.

1.4 Record keeping

The records of surveys, detections or outbreaks and results of other operational procedures should be retained at least for 5 years and generally for as long as possible. Such records should be made available to trading partners on request.

1.5 Quality assurance programme

The FF-PFA programme, including the surveillance procedures (both trapping and fruit sampling when used), regulatory controls and corrective action planning should comply with approved procedures. The effectiveness of the programme should be monitored periodically by the NPPO and the trading partner, as appropriate, through quality assurance procedures.

These procedures should include recording information relating to formal delegations of responsibilities to key personnel, for example:

- a management representative with defined authority and responsibility to ensure that the systems/procedures are implemented and maintained appropriately;
- a nominated reference entomologist with responsibility for the authoritative identification of fruit flies to species level;
- other formal delegations where appropriate.

2. Specific Requirements

2.1 Determination of the FF-PFA

The determining characteristics of the FF-PFA include:

- target fruit fly species
- commercial and non-commercial host species
- geographical area (detailed maps showing the boundaries, natural barriers, entry points and host area locations, and, where necessary, buffer zones)
- climate (rainfall, relative humidity and temperature).

2.2 Establishment of the FF-PFA

The following should be developed and implemented:

- surveillance activities for establishment of the FF-PFA
- regulatory controls on movement of host material or regulated articles.

The establishment of buffer zones may also be necessary (see Section 2.1) and it may be useful to collect additional technical information during the establishment of the FF-PFA.

2.2.1 Surveillance activities for establishment

A regular survey programme should be established and implemented. Trapping may be sufficient to determine fruit fly absence or presence in an area. However, trapping and fruit sampling activities complement each other and fruit sampling is especially required for species that are non-responsive to specific lures.

Surveys should be undertaken for at least 12 months in the FF-PFA using specific trapping and fruit sampling procedures where required in all relevant areas of commercial and non-commercial host plants to demonstrate that the pest is not present in the area. There should be no detections (adult or immature stages) of the target species during the survey period. There are different trapping and fruit sampling regimes for different fruit fly species. Surveys should be conducted using the specific guidelines in Annexes 1 and 2. These guidelines may be revised as trap, lure and fruit sampling efficiencies improve.

The NPPO should establish a quality assurance programme for the survey to verify and document that all procedures are met. There should be identification capability for the target fruit fly species within the country that intends to establish the FF-PFA.

2.2.1.1 Trapping procedures

This section contains general information on trapping procedures. Trapping procedures described apply to the target fruit fly species and to those exotic fruit fly species that do not occur in the country or area. For more detailed information refer to Annex 1. Trapping should consider the following:

Trap type and lures

Different traps have been developed and used over decades to survey fruit fly populations. Traps used for fruit flies are dependent on the target species and the nature of the attractant. The most widely used traps contain para-pheromone or pheromone lures that are male specific. Lures for capturing females are based on food or host odours. Historically, liquid protein baits have been used to catch a wide range of different fruit fly species. Liquid protein baits capture both females and males, with a slightly higher percent of females captured (although identification of the fruit flies can be difficult due to premature decomposition). Dry synthetic protein baits widely used against some fruit fly species are female biased, capture less non-target organisms and, when used in dray traps, prevent premature decomposition of captured specimens.

Trap density

Trap density (number of traps per unit area) is critical for fruit fly surveys and it should be adjusted based on target fruit fly species, trap efficiency, and biotic and abiotic factors. Density may change depending on the programme phase, with different densities required during the establishment of FF-PFA and the maintenance phase. Trap density also depends on the risk associated with potential points of entry. For surveillance for establishment, higher densities are required in commercial production sites and lower densities at points of entry.

Trap deployment (determination of the specific location of the traps)

In a FF-PFA programme, an extensive trapping network should be deployed over the entire area. The trapping network layout will depend on the characteristics of the area, host distribution and the biology of the fruit fly of concern. One of the most important features of trap placement is selecting a proper location and trap site within the host tree. The application of geographic positioning systems (GPS) and global information systems (GIS) are useful tools for management of a trapping network.

Preferred host(s) and fruit maturity

Trap location should take into consideration the presence of the preferred hosts (primary, secondary and occasional hosts) of the target species. Because the pest is associated with mature fruit, the location including rotation of traps should follow the sequence of fruit maturity in host plants.

Trap servicing

The frequency of trap servicing (maintaining and refreshing the traps) during the period of trapping should depend on the:

- longevity of baits (attractant persistency)
- retention system
- rate of catch
- season of fly activity.

Trap inspection (checking the traps for fruit flies)

The frequency of inspection during the period of trapping should depend on the level of fly activity and response periods required at different times of the year and the relative number of target and non-target fruit flies expected to be caught in a trap.

Record keeping

All trapping data should be properly recorded. Records should be kept up to date and should be available for easy retrieval.

Identification capability

NPPO's should have in place adequate infrastructure and trained personnel to identify captured specimens of the target species in an expeditious manner.

2.2.1.2 Fruit sampling procedures

Fruit sampling complements trapping procedures in establishing a FF-PFA. The following factors should be considered when using fruit sampling (see also Annex 2), especially with fruit flies that are not responsive to specific lures:

Host preference

Fruit sampling should take into consideration the presence of primary, secondary and occasional hosts of the target species.

Targeting high risk areas

Fruit sampling should be targeted to areas likely to have presence of infested fruits such as urban areas, abandoned orchards, rejected fruit at packing houses, fruit markets and sites with a high concentration of primary hosts. The sequence of hosts that are likely to be infested by the target fruit fly species in the area should be used to target fruit sampling areas.

Sample size

Factors to be considered include:

- The sample size should be based on a statistical study to ensure samples provide an adequate level of confidence of fruit fly detection within the host commodity.
- The sample size, the number and weight of fruits per sample should be planned based on the availability of primary host material in the field.
- Samples should include fruits with symptoms on trees, fallen or rejected fruit at packing facilities, where appropriate.

Timing

Fruit sampling should be a continuous operation covering the full fruiting season following maturation phenology of the host(s).

Procedures for processing fruit

Fruit samples collected in the field should be brought to a facility for holding, fruit dissection, pest recovery and identification. Fruit should be labeled, transported and held in a secure manner to avoid mixing fruits from different samples.

Identification capability

NPPOs should have in place adequate infrastructure and trained personnel (or access to such personnel) to identify fruit fly immature stages and emerged adults of the target species in an expeditious manner.

Record keeping

All fruit sampling data should be properly recorded to permit trace-back of detections. Records should be kept up to date and should be available for easy retrieval.

2.2.2 Regulatory controls on the movement of host material or regulated articles

Regulatory movement controls for host materials or regulated articles should be implemented to prevent the entry of target pests into the FF-PFA during the establishment phase. These controls depend on the assessed risks (after identification of likely pathways and regulated articles) and may include:

- listing of the target fruit fly species on a quarantine pest list
- publishing of regulations, including restriction of the movement of certain products within areas of country or countries and/or buffer zones, if necessary
- specification of import requirements into a country or area
- inspection of host materials and regulated articles, examination of relevant documentation as appropriate and, where necessary for cases of non-compliance, the application of appropriate non-compliance measures (e.g. treatment, reshipment or destruction).

2.2.3 Additional technical information for establishment

Additional information may be useful during the establishment phase of FF-PFAs. This includes:

- historical records of detection, biology and population dynamics of the target pest, and survey activities for the designated target pest(s) in the FF-PFA
- the results of phytosanitary measures taken as part of actions following detections of fruit flies in the FF-PFA
- records of the commercial production of host crops in the area, an estimate of non-commercial production, and the presence of wild host material
- lists of the other fruit fly species that may be present in the FF-PFA.

2.3 Verification and declaration of pest freedom

The NPPO verifies the fruit fly free status of the area (see ISPM No. 8: *Determination of pest status in an area*) by checking the compliance with the procedures set up in accordance with this standard (surveillance and regulatory controls). The NPPO, through its national or sub-national regulatory process, declares the

establishment of the FF-PFA and notifies trading partners as appropriate.

In order to be able to verify the fruit fly free status in the area and for purposes of internal management, the continuing FF-PFA status should be checked after the PFA has been established and any phytosanitary measures for the maintenance of the FF-PFA have been put in place.

2.4 Maintenance of the FF-PFA

In order to maintain the FF-PFA status the NPPO should continue the operation of the surveillance activities and regulatory controls.

2.4.1 Surveillance for maintenance of the FF-PFA

After verifying and declaring the FF-PFA, the official surveillance programme should be continued at a level assessed to be required for maintenance of the FF-PFA as long as the FF-PFA is operational. Regular technical reports (for example monthly) of the survey activities should be generated. This is the same as for establishment of the FF-PFA (see Section 2.2) with differences in density and trap locations dependent upon the assessed level of risk of introduction and establishment of the target species. In this case (i.e. surveillance for maintenance), lower densities are required in commercial production sites and higher densities in points of entry.

2.4.2 Regulatory controls on the movement of host material and regulated articles

These are the same as for establishment of the FF-PFA (see Section 3.2.2).

2.4.3 Corrective actions (including response to an outbreak)

The NPPO should have prepared plans for corrective actions that may be implemented if the target pest is detected in the FF-PFA (see Annex 3). These should include:

- criteria for the declaration of an outbreak/incursion and the determination of the outbreak area
- criteria for reinstatement of a FF-PFA after an outbreak
- procedures for responding to post-harvest interceptions
- criteria for initiating further surveillance
- rapid identification of target pests
- delimiting survey (trapping and fruit sampling)
- control measures
- notification of trading partners as appropriate.

A corrective action plan should be initiated within 72 hours of the detection (of an adult or immature stage of the target pest).

2.5 Suspension, termination and reinstatement of a FF-PFA

2.5.1 Suspension and termination

The status of the FF-PFA should be suspended or terminated when an outbreak of the target pest occurs or procedures are found to be faulty, for example inadequate host movement controls.

If the criteria for an outbreak are met, this should result in the implementation of the corrective action plan as specified in this standard and immediate notification of trading partners (see ISPM No. 17: *Pest reporting*). If the control measures are not effective and the pest becomes established in the area, the status of the FF-PFA should be terminated. The whole or part of the FF-PFA may be suspended or revoked. Where a suspension is put in place, the criteria for lifting the suspension should be made clear. Trading partners should be informed of any change in FF-PFA status.

2.5.2 Reinstatement

Reinstatement may take place:

- in the case of detection of a fruit fly outbreak, only after having no further detections for at least three life cycles of the target pest species or when the conditions for establishment of the FF-PFA have again been achieved.
- in case of a fault in the procedures, only when the fault has been corrected.

GUIDELINES ON TRAPPING PROCEDURES

1. Trapping survey objectives and applications

The three objectives of trapping surveys are:

- detection survey - to determine if species are present in an area.
- delimiting survey - to determine the boundaries of an area considered to be infested or free from a pest.
- monitoring survey – an ongoing survey to verify the characteristics of a pest population.

Trapping surveys are applied:

- In infested areas: to determine presence of the target species and to monitor established fruit fly populations.
- For suppression: to measure the efficacy of control measures such as bait sprays, sterile insect technique (SIT), biological control and male annihilation technique (MAT) in an infested area to reduce the fruit fly population and thereby limit spread. Suppression is a process that is applied to result in an area of low pest prevalence.
- For eradication: to measure the efficacy of control measures such as bait sprays, SIT, biological control and MAT, to eliminate a pest from an area. Eradication is a process applied to reach free areas.
- For exclusion: to determine the presence of species that are under exclusion measures and to confirm or reject the pest free area status. Exclusion is a process applied to minimize the risk of introduction or re-introduction of the target species in a pest free area.

2. Traps and attractants used for fruit flies

Traps used for fruit flies are dependent on the nature of the attractant. The most widely used traps contain para-pheromone lures that are male specific. The para-pheromone trimedlure (TML) captures medfly (*Ceratitis capitata*) and Natal fruit fly (*Ceratitis rosa*). The para-pheromones methyl-eugenol (ME) and cuelure (CUE) captures a large number of *Bactrocera* species. Para-pheromones are generally highly volatile, and can be used with panels, delta-traps and bucket-type traps. TML and ME have controlled-release formulations providing a longer lasting attractant for field use. Attracted flies are retained in panel and delta traps using a sticky material. Para-pheromones may also be mixed with a sticky material and applied to the surface of the panels. Retention systems for bucket traps are usually a form of a volatile toxicant such as DDVP (2,2-Dichlorovinyl dimethyl phosphate) and malathion, although some of these are repellent at higher doses. For use of synthetic lures water is used with a surfactant to retain attracted flies. The percentage of females captured with a para-pheromone trap is extremely low.

Lures for capturing female fruit flies are based on food or host odours. Historically, liquid protein baits have been used to catch a wide range of different fruit fly species. Liquid protein baits capture both females and males, with a higher percent of females captured. These liquid baits generally are not as sensitive as the para-pheromone bait. In addition the usage of liquid baits results in capturing high percentages of non-target insects. Ammonium carbonate (AC) and/or ammonium acetate (AA) lures are used for several *Rhagoletis* species. A two component combination of AA and putrescine (PT) are attractive for Mexican fruit fly (*Anastrepha ludens*) and Caribbean fruit fly (*Anastrepha suspensa*). The addition of a third component, trimethylamine (TMA) results in a highly attractive female lure for medfly which is used in early detection trapping networks.

The two and three component synthetic lures described above are generally used in plastic McPhail traps, although they can be used with a variety of other traps. Ammonium acetate and ammonium carbonate, when used for capture of *Rhagoletis* species, are used with red sphere traps or yellow panel traps coated with a sticky material. A synthetic attractant based on host fruit volatiles is currently used for detection of apple maggot fly (*Rhagoletis pomonella*). The chemical, butyl-hexanoate (BuH), is used with a red sphere trap coated with a sticky material, typically placed at a short distance from the trap.

2.1 Trap descriptions

2.1.1 Jackson trap (JT)

The body of a standard Jackson trap (JT) is a delta shaped object made of waxed cardboard material. The body parts include:

- 1) white or yellow rectangular piece of waxed cardboard insert floor. The insert is covered with a thin layer of sticky material used to trap flies once they land inside the trap body,
- 2) polymeric plug that holds the lure and
- 3) wire hook placed at the top of the trap body.

This trap is mainly used with para-pheromone lures (mixed with an insecticide) to capture male fruit flies. The most common lures used with the JT are: trimedlure (TML), methyl eugenol (ME) and cuelure (CUE). The JT is one of the most economic traps commercially available. It is easy to carry, handle and service, providing the opportunity of servicing a greater number of traps per man-hour than other commercial traps.

2.1.2 McPhail trap (McP)

The conventional McPhail trap (McP) is a transparent glass or plastic pear shape invaginated container. The trap parts include: a) rubber cork or lid that seals the upper part of the trap and b) wire hook to hang traps on tree branches.

This trap uses a liquid food bait, based on hydrolyzed protein or torula yeast tablets. Food lures are generic by nature and, besides the target fruit fly species, traps tend to catch a wide range of other tephritid and non-tephritid flies as well as other insects.

2.1.3 Plastic two-piece McPhail trap

This trap consists of a two piece plastic cylinder shape invaginated container. The upper part and base of the trap can be separated allowing the trap to be serviced and re-baited. The transparent upper part of the trap contrasts with the yellow base enhancing trap ability to catch fruit flies. This trap can be used with the liquid protein bait or with the dry synthetic lure. This trap works on the same principle as the MCP.

2.1.4 Steiner trap

The Steiner trap is a horizontal, clear cylinder with a large opening at each end. The lure is added by suspending, from the centre of the trap, a cotton wick soaked in 2-3 ml of a mixture of a chemical lure and an insecticide, usually malathion or dichlorvos. The insecticide is added to avoid flies escaping or to avoid predation of captured flies. If the insecticide is not mixed with the lure, it is added on a strip of filter paper and placed in the trap.

2.1.5 Tephri trap

The Tephri trap is a McPhail type trap. It has a yellow base and a clear top, which can be removed to facilitate servicing. This trap has entrance holes around the top of the periphery of the yellow base, which has an invaginated opening in the bottom. Inside the clear top is a platform for placement of attractants.

It is used for trapping medflies when baited with either hydrolyzed protein at 9% concentration, or TML or Cuelure in a plug or liquid. If the trap is used without the side holes, the insecticide will not be necessary. However, when used with side holes, an insecticide solution or a DDVP strip will be needed to avoid escape of captured insects

2.1.6 Open bottom dry trap (OBDT)

This trap is an open-bottom cylindrical dry trap that can be made from opaque green plastic or wax-coated green cardboard. It has a transparent top, three equally-spaced holes around the circumference of the cylinder midway between the ends, an open bottom, and is used with a sticky insert. It is used with the synthetic female fruit fly lures in areas where more expensive traps cannot be used.

The food-based synthetic chemical attractant can be used to capture female and male medflies. The synthetic female fruit fly lures are attached to the inside walls of the cylinder. Servicing is easy because the sticky insert permits removal and replacement similar to the inserts used in Jackson traps.

2.1.7 Yellow trap

This is an open yellow cardboard trap, rectangular in shape. The rectangular cardboard is covered, on both sides, with a thin layer of sticky material, with the lure mixed into the coating or attached to the face of the trap. A wired hook, placed on top of the trap body, is used to hang the trap from the tree branches. This trap uses the male specific parapheromone lures - TML, ME and cuelure.

Its use is recommended for the post suppression and fly-free phases where highly sensitive traps are required. This trap should not be used in areas subjected to mass release of sterile flies due to the amount of released flies that would be caught.

Table 1. List of lures and attractants used in fruit fly traps

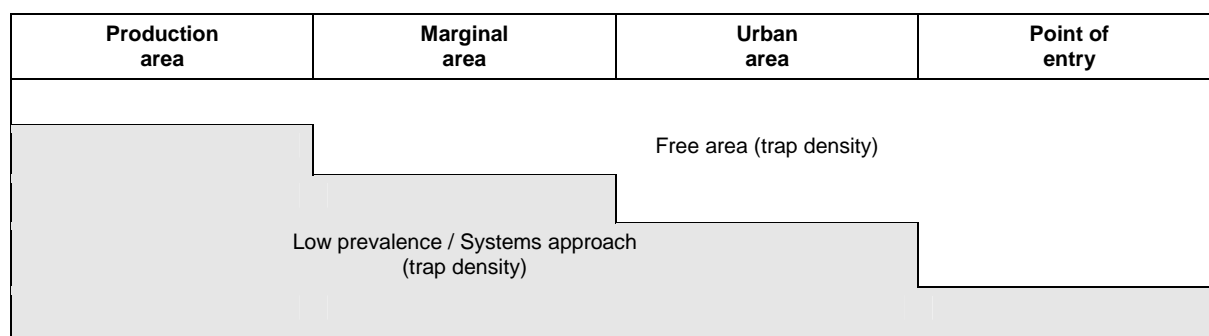
Common name	Acronym	Chemical	Formulation	Field longevity*
Parapheromones				(weeks)
trimedlure	TML	<i>tert</i> -butyl 4 (and 5)-chloro-2-methylcyclo-hexane-1-carboxylate	Polymeric plug/panel	6
			Laminate	6
			liquid	2
methyl eugenol	ME	Benzene, 1,2-dimethoxy-4-(2-propenyl)	Polymeric plug/panel	6
			Liquid	2
cuelure	cuelure	4-(<i>p</i> -hydroxyphenyl)-2-butanone acetate	Liquid	2
Pheromones				
papaya fruit fly	PFFP	3-methyl-1-pyrazine	Membrane-based	4
olive fly (spiroacetal)	OFP	(1,7)-dioxaspiro-[5,5]undecane (olean)	Polymer	4
Food-based attractants				
torula yeast/borax	TY	Torula yeast/borax	Pellet	1
protein derivatives	HP	hydrolized protein	Liquid	1
ammonium acetate	AA	ammonia + acetic acid	Membrane-based	6
			Liquid	1
			Polymer	4
ammonium (bi)carbonate	AC	Ammonia	Membrane-based	6
			Liquid	1
			Polymer	4
ammonium salts	A	Ammonia	Salt	
putrescine	Pu	1,4 diaminobutane	Membrane-based	6
trimethylamine	TMA		Membrane-based	6
butyl hexanoate	BuH		Vial	2

*Based on half-life

3. Trap density for establishment and for maintenance

Trap density is a critical factor for establishment and maintenance of fruit fly free areas and low prevalence areas. The densities need to be adjusted based on many factors including: trap efficiency, lure/attractant efficiency, location regarding type and presence of host, climate, topography and programme phase.

Densities may also vary along a gradient from production to marginal areas, to urban areas and points of entry. For example, trapping densities in an area of low pest prevalence, where the presence of the target species is known, should be higher in the production field and decrease toward points of entry (Figure 1). In a designated pest free area, the reverse occurs: a higher density is required at points of entry and lower density in commercial orchards

Figure 1. Diagram to illustrate trap density according to pest free area or area of low pest prevalence

3.1 Trapping densities according to the type of target areas

Trapping densities vary from 0.25 to 50 traps per square kilometer depending on the factors mentioned above, mainly the FF-PFA programme phase (i.e. establishment or maintenance) and area being monitored.

Densities are also dependant on associated survey activities, such as fruit sampling to detect immature stages. In those cases where trapping surveys are complemented with fruit sampling activities, trap densities should be lower than the recommended densities.

4. Layout of trapping network

In area-wide suppression/eradication programs, an extensive trapping network has to be deployed over the entire area subjected to control actions. The trapping network layout will depend on the intrinsic characteristics of the area. In areas where continuous compact blocks of commercial orchards are present, and in urban and suburban highly populated areas where hosts exists in backyards, traps are arranged in a grid system with a uniform trap distribution. In areas with scattered commercial orchards, rural or low populated villages with backyard fruit hosts, and in commercial and wild host marginal areas, trap network arrays are normally linear with a distribution pattern, following roads that provide access to host material.

5. Trap placement

It is of vital importance to have a list of the primary, secondary and occasional fruit fly hosts, their phenology, distribution and abundance. With this basic information, it is possible to properly place and distribute the traps in the field and it also allows for an effective planning of a trap rotation programme. Traps have to be rotated following the maturation phenology of the main fruit hosts. By rotating the traps it is possible to follow the fruit fly population throughout the year and it also increases the number of sites being checked for fruit flies.

One of the most important factors of trap placement is selecting a proper trap site. When possible, pheromone traps should be placed in mating areas. Fruit flies normally mate in the crown of a fruit host tree or close to the host trees with some light and on the upwind side. Other suitable trap sites are resting and feeding areas in trees that provide shelter and protect flies from strong winds and predators. Protein traps should be placed close to fruit host trees, in a shady area. In this case, traps should be placed in primary hosts during their fruit maturation period. In the absence of primary hosts, secondary hosts should be used. In areas with no hosts identified as potential fruit fly pathways, traps should be placed in trees that can provide shelter, protection and food to adult fruit flies. Traps should be placed 4-6 feet from the ground in the middle to the top part of the host tree canopy and oriented towards the upwind side. Traps should be protected from direct sunlight, strong winds and dust. It is of vital importance to have the trap entrance clear from twigs and leaves in order to allow proper lure airflow and an easy access for the fruit flies.

6. Trap mapping

Once traps are placed in carefully selected sites at the right density and distributed in an adequate array, the location of the traps has to be recorded. The application of the geographic positioning systems (GPS) and geographic information systems (GIS) technology in management of trapping network has proven to be a very powerful tool. The GPS allows each trap to be geo-referenced through geographical coordinates, which are then used as input information in the GIS. A database of all traps with their corresponding coordinates is kept, together with the records of trap services, re-baiting, trap catches, etc. The GIS provides high resolution maps showing the exact location of each trap and other valuable information such as exact location of fly finds (detections or outbreaks), historical profiles of the geographical distribution patterns of the pest, size of the populations in given areas, etc. This information is extremely useful for effective planning of control activities such as bait sprays and sterile fly releases and for being more cost-effective in their application. When GIS is not available, a map or sketch of the trap location and the area around the traps should be prepared. The references of the trap location should include visible land marks; in the case of traps placed in suburban and urban areas in backyard hosts, references should include the full address of the property where the trap was placed. The trap reference should be clear enough to allow trapping inspectors, control brigades and supervisors to find the trap with ease.

7. Trap service intervals

Trap service and re-bait intervals are specific to each trap system. However, the following guidelines are effective for most of the current traps commercially available. Capturing flies will depend, in part, on how well the trap is serviced. Servicing a trap has to be a clean and quick procedure. Lures (pheromones or food lures) have to be used in the exact amounts and replaced at the recommended time period. Commercially available pheromone lures are contained in dispensers or plugs at amounts that are standard for each different type of lure. However, the release rate will vary with different environmental conditions. In hot and dry areas The release rate is high in hot and dry areas, and low in cool and humid areas. Service interval should be adjusted according to the prevailing environmental conditions. Food lures in liquid form have to be diluted in water before use. In hot and dry climates, traps have to be re-baited twice per week, whereas under hot and humid, or temperate, conditions the re-bait interval is once per week. When liquid lures are used (e.g. liquid trimedlure or hydrolyzed proteins), it is important to avoid spillage or contamination of the external surface of the trap body. This would reduce the chances of flies entering the trap. For traps that use a sticky insert to capture

flies, it is important to avoid contaminating areas in the trap that are not meant for catching flies. This also applies for leaves and twigs that are in the trap surroundings.

In general, the estimated number of traps serviced per day per person for most of the traps is 50. The exception is [PMT] baited with liquid protein that requires more time. The number of traps typically serviced per person per day is 30. These values vary depending on host density, environmental and topographic conditions.

8. Trap record keeping

The establishment and maintenance of fruit fly pest free areas should be adequately documented and periodically reviewed. The documentation should include:

- trap location and relocation
- trap capture for at least last 24 months
- trap mapping and area delimitation.

If detection of the target species has occurred, the phytosanitary measures taken and the results of those measures should be documented.

9. Quality control for trapping procedures

A quality control programme for the trapping activities and record keeping should be established. The key elements of the quality control programme should include:

- verification of lure efficacy
- placement and recovery of marked target flies
- regular reviews of survey documentation
- audits of trap placement and servicing
- confirmation of identifier competency
- record keeping procedures.

10. Flies per trap per day (FTD)

The flies per trap per day is a population index that estimates the average number of flies captured in one trap in one day that the trap is exposed in the field. The function of this population index is to have a relative measure of the size of the adult pest population in a given space and time. It is used as baseline information to compare the size of the population before, during and after the application of a fruit fly control programme. The value of the FTD in the fruit fly free area must be equal to zero in order to maintain its phytosanitary status. Its value is the result of dividing the total number of captured flies by the product obtained from multiplying the total number of serviced traps by the average number of days the traps were exposed. The formula is as follows:

$$\text{FTD} = \frac{F}{T \times D}$$

where,

F = total number of flies

T = number of serviced traps

D = average number of days traps were exposed in the field

Reference document:

Trapping Guidelines for Area-Wide Fruit Fly Programmes. 2003. IAEA, Vienna.

GUIDELINES FOR FRUIT SAMPLING

1. Background

In fruit fly control programmes, fruit sampling is a pertinent method used to help assess the age structure of a fruit fly population, host sequence and seasonal abundance. It is also used as a detection tool during eradication and fly free phases.

In sterile mass release programmes, fruit sampling plays a predominant role as the most reliable method for determining the occurrence of the target pest and for evaluating the effectiveness of the control measures applied.

In sterile fly release areas, fruit sampling relegates trapping to a second place, especially due to the likelihood of error in adult identification through the capture of hundreds of thousands of sterile flies (Enkerlin *et al.* 1996).

Under certain conditions, fruit sampling can provide better information than trapping for delimitation of established wild populations, although, in fly-free areas it is less efficient in detecting newly introduced populations. However, it can complement trapping by confirming the presence and/or establishment of a population and by providing information on the magnitude of an outbreak.

Fruit sampling is also a necessary tool to identify the hosts of fruit fly species, in case the fly is a lesser-known species or if a fruit fly outbreak occurs in a new geographic area. As fruit flies are highly adaptive, they can change their choice of host plants, and this can only be detected through the collection of fruits.

2. Scope

The fruit sampling procedures in this document cover the different phases of a programme aimed at developing fruit fly pest free areas (FF-PFAs), from pre-suppression/eradication activities to establishment of the area. However, relevant to this standard are only those sampling procedures applied as part of the certification process during the establishment of a FF-PFA. Fruit sampling during maintenance of the FF-PFA is applied as part of a corrective action plan thus it is not described in this document.

3. Fruit Sampling Objectives

The aim of field activities for the fruit sampling, at the initial stages (pre-eradication) of an area-wide control programme, is to produce baseline information (Table 1). The information includes primary, secondary and occasional hosts of fruit flies in the area, as well as the phenology and distribution of the respective hosts in the area under consideration. It also provides information on the pest's host range, host sequence and fruit fly population structure.

During the suppression and eradication phases, fruit sampling becomes an evaluation tool of the control activities by measuring fruit infestation levels. During the post-eradication phase (certification) and fly-free phase (maintenance), fruit sampling becomes a detection tool (Table 1). Primary hosts are collected in the most sensitive geographical areas. The responsibilities of field sampling end with the delivery of the collected samples to the fruit-processing laboratory. The purpose of the laboratory is to study the fruit samples by processing the fruits to rear fruit fly larvae to the adult stage for easy identification or to dissect the fruit and identify larvae if capabilities for species identification at the larval stage exist.

Table 1. Fruit sampling applications related to the programme objective and operational phase

Fruit Sampling Application	Objective	Programme phase
General fruit sampling	Baseline information	Pre-eradication
Systematic fruit sampling	Evaluation of suppression	Suppression
Systematic fruit sampling	Evaluation of eradication	Eradication
Selective fruit sampling	Certification of FF-PFA	Post-eradication
Corrective action plan	Maintenance	Fruit fly free area

4. Fruit Sampling Methods and Procedures

There are basically three sampling applications that are dependant of the objective and programme phase (Table 1): general sampling, systematic sampling and selective sampling.

4.1 General sampling

This type of sampling provides mainly qualitative information and is of fundamental importance. It consists of collecting, throughout the year, the widest range of fruits that could be infested by fruit flies with no special emphasis on a particular fruit, although with a slight preference for those fruits that have been infested in other countries, dealing with the same fruit fly species and having similar ecological conditions.

The primary objective of this type of sampling is to identify true hosts in the area and to determine host susceptibility, host range and infestation gradients. Because this fruit sampling is done extensively throughout the year it also provides information on host distribution, density and phenology. All this information is used for proper planning of year round fruit sampling activities.

During the preparation stage of a programme, such as for an eradication campaign, this sampling has to be carried out for at least one year so that it can provide information regarding the different phenological stages of the fruit hosts. This sampling can be considered completed when sufficient information on relative abundance, temporal and spatial distribution of the pest has been obtained. This must definitely precede the start of eradication actions, during which the systematic fruit sampling is enforced. The general sampling is extensive by nature and only small amounts of fruit sampling are collected. Fruit samples have to be continuously collected with a time interval of 14 days from the entire area throughout the year (Table 2). For number of samples and kilograms per unit surface see Table 3.

Table 2. Fruit sampling frequencies.

Fruit sampling application	Frequency (days)
General fruit sampling	14
Systematic fruit sampling	7 to 14
Selective fruit sampling	7
Corrective action plan	1 to 3

Table 3. Fruit sampling levels per km²

Programme Phase	Fruit orchards		Urban and suburban areas		Other areas with scattered hosts	
	samples ¹	kg ¹	samples	kg	samples	kg
Pre-eradication	3	6	2	4	1	2
Suppression (chemical control)	4	8	3	6	2	4
Eradication (autocidal control)	6	12	5	10	4	8
Post-eradication	10	20	9	18	8	16
Fly free area	Only applied as a result of an adult detection as part of the corrective action plan.					

¹Average figures used in operational programmes

4.2 Systematic sampling

This type of sampling is based on information produced by the general sampling and is carried out in areas subjected to control procedures during the suppression/eradication phase.

The objective of this sampling is to keep a close and systematic surveillance on wild fly populations. One of its features is that it uses a selective, hierarchical procedure for the known hosts, based on the degree of preference. In this way, for sampling, priority is given to the most preferred hosts (primary hosts) and secondly only to other hosts considered to be secondary or occasional hosts. If there are no known hosts at the sampling location, any type of fruit that potentially can be infected by fruit flies can be collected. Fruit samples have to be continuously collected with a time interval of 7 to 14 days from the entire area throughout the year (Table 2).

This type of fruit sampling is much more intensive than the general sampling. For number of samples and kilograms per unit surface see Table 3.

4.3 Selective sampling

This sampling focuses on the collection of the preferred host(s) during its maturation season. Preferred hosts are sometimes called "trap-hosts", since the likelihood of detecting the pest is high even when populations are at low levels. This type of sampling is carried out and during the post-eradication phase in areas under verification of eradication

status as part of the certification process. Fruit samples have to be collected from the selected crops and sites every 7 days during the fruit maturation period (Table 2). For number of samples and kilograms per unit surface see Table 3.

During the maintenance phase fruit sampling is not conducted on a continuous basis in the free area. In this case selective fruit sampling activities will be implemented after the detection of an adult in a trap. This is explained in more detail in Annex 3 on corrective action plans.

Given the high degree of preference for these hosts, special emphasis should be placed on markets and packing facilities where fruits are selected and dumped when damaged. Selective sampling can also be carried out on trap-host(s) especially during the time when the host trees are bearing a small number of fruits (at the beginning and/or at the end of the fruiting season). This greatly increases the probability of detecting the pest. If the trap-crop is industrially processed or packed within the sampling area, it is better to take samples directly from the processing and packing centers. In this case a set statistical fruit sampling is conducted on each fruit load during the selection process. Generally, fruit that does not satisfy quality standards is discarded and sold in the domestic market or disposed and can be used for sampling purposes, substantially increasing the probabilities of detecting the pest. The origin of this fruit can be tracked back to the level of the field lot where the fruit was harvested by consulting the records of the fruit load. Records need to be maintained at all times by the personnel at the packing facility and presented upon request.

In case trap-crops are of commercial value for low-income families, purchase of this fruit is advisable. Confiscation of such fruit through phytosanitary regulations, even in small amounts, can cause social problems and damage the public image and acceptability of the campaign.

5. Fruit Sampling Procedures

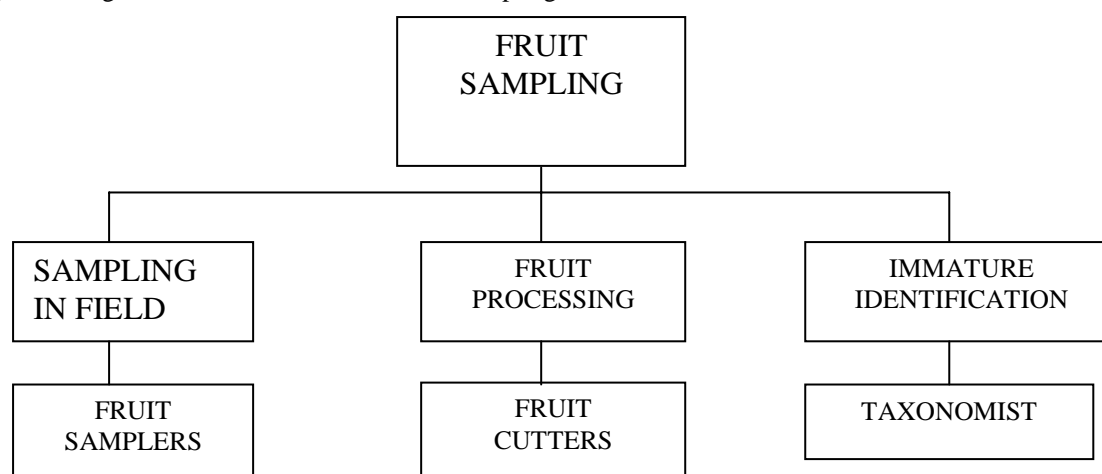
5.1 Division of sampling area and location of sampling sites

It is of fundamental importance to establish an effective method to divide the sampling area for easy location of the sampling sites. Using maps of preferably a scale of 1:50,000 the sampling area is divided into quadrants of 10 x 10 km (or 100 km²) following international coordinates used in conventional cartography. The quadrant is in turn subdivided into four sub quadrants. A thorough inspection for determination of likely sites for fruit sampling within the sub quadrant needs to be conducted. Once sampling sites are identified they need to be geo-referenced. The availability of the Geographical Positioning System (GPS) greatly facilitates determination of geographical coordinates for identification of sampling sites. The identification number of each site is used for record keeping, feeding databases and for easy location of the site in case of the detection of an immature stage of the pest.

5.2 Organization

Fruit sampling can be done together with trapping activities in the case of the systematic fruit sampling. However it can also be a separate activity in a programme. Fruit sampling does not necessarily follow the trapping routes especially in the case of general and selective fruit sampling. The standard organizational structure for fruit sampling activity in operational programmes is presented in Figure 1.

Figure 1. Organizational structure of the fruit sampling section:



Equipment for fruit collection includes:

- suitable vehicle
- fruit bags preferably made of cotton or fruit holding boxes, either plastic or polyethurane (the latter material will protect the fruit from heat)
- fruit cutter to collect fruits from the tree
- labels with following information (date, quadrant, sub quadrant, GPS position as WPT (Way point), common name of host, number of fruits, kilograms and name of technician)

- screen to cover the boxes (some fruit fly larvae jump; and for boxes with low sides, larvae can end up in another sample by just jumping)
- absorbent material to place in the boxes under the fruit (this will absorb the juice coming out of the fruit, so the fruit fly larvae will not drown)
- recording sheet and maps of the area.

5.3 Fruit collection procedures

To start a sampling programme the following information is of importance:

- infra structure and topography of the area (visit area, maps)
- biology and ecology of the pest
- phenology of the wild and cultivated hosts and their occurrence
- composition of the vegetation
- fruit marketing centers, fruit growing areas, packing facilities.

Sampling should be done in the entire area; if vehicles cannot be used, samples have to be collected on foot or on horse. This does reduce the amount of sampling as it takes much more time.

In taking samples, the available information on the biology and habits of the fly, damage symptoms, as well as pest population levels and distribution should be used. In other words, samples are not to be taken at random but on the basis of certain technical criteria and empirical knowledge.

Fruit should not be collected in plastic bags. Although this is easily available, it might cause the larvae to die due to heat, shortage of oxygen or simply by drowning in the fruit juice in the bag.

Samples can be collected either from the ground or from the tree. In the case of fruit collected from the ground, only recently fallen fruits should be used, as fruit fly larvae might have already left older fruits to pupate in the soil.

The size of a sample can vary widely. This will depend on availability and volume of the fruit sampled. It can range from 0.5 kg in the case of coffee berries to 5 kg in case of a larger fruit like grapefruit. Excessive sample sizes should be avoided, as they will make farmers or property owners unsatisfied with the programme.

Each sample should be properly labeled. The data on the label should be such that the original location of the fruits can easily be retraced in case the fruits are infested with the target fruit fly.

Fruit sampling can also give information on the fruit fly parasitism rate in that area, as on infestation by other fruit fly species.

In an eradication programme, where the fly is already low in numbers, fruit sampling should be directed to the primary hosts. Damaged fruits of these fruit species should be preferably sampled. Table 4 indicates major, secondary and occasional hosts for a number of important fruit fly species.

Fruit should be collected ripe. Fruit maturity and the development of eggs and larvae in the fruit are often in synchrony. Females select fruits with a suitable degree of ripeness in order for the offspring to complete its development. Unripe fruits should not be collected.

6. Fruit processing

After the fruit samples are brought in from the field, there are several ways to process it:

6.1 Fruit cutting

Each fruit is cut for careful observation, if fruit fly larvae are present in the fruits. Especially in an eradication campaign, immediate action must be taken if larvae are found. Each fruit is dissected on the basis of its color and consistency, which is related to the degree of ripeness. The development of the larvae is closely related to the fruit ripeness. The person dissecting the fruit should be well trained to recognize larvae in infested fruit, as well as distinguishing between Diptera larvae and larvae of other insect orders, such as scavenger flies and beetles. The larvae are placed in separate vials containing water and labeled with their respective sample number; and then sent to the taxonomist. The person dissecting fruits should take a 15-30 minutes break after 2-3 hours of work in order to reduce or avoid possible errors.

6.2 Fruit holding and maturing

Equipment for fruit holding includes:

- Fruit holding boxes with screens on the side and top for ventilation either wooden plastic or polyurethane (this last material will protect the fruit from heat)

- Absorbent material to place in the boxes under the fruit (this will absorb the juice coming out of the fruit, so the fruit fly larvae will not drown)
- Plastic or metallic trays for fruit dissection
- Other material (entomological tweezers, glass vials, labels, etc)
- Data sheets.

Each fruit is placed in a container to allow for further ripening, so that the fruit fly larvae get a chance to mature and pupate. This is the easiest method to determine the identity fruit fly species present and/or the parasitism rate of fruit flies. The time needed for the fruit to be stored, so as to have good fly emergence, depends on the fruit species, and on the fruit fly in question.

Fleshy and thin skin fruits, such as guava, cherry and mango, ripen quickly so they are kept 5 to 10 days, in order for all larvae to pupate. Fruits with more persistent skin like citrus may have to be stored for as long as 15 days, before larvae are mature enough to emerge and pupate.

During the rainy season or under high relative humidity in the tropics, the fruits can be treated with a 2-5 % sodium benzoate solution (one-minute submergence) in order to slow down the development of saprophytic microorganisms (i.e. fungi and bacteria).

The type of container will depend on the size of the fruit sample. Jars may be used in case of small fruits/samples; but for bigger samples, plastic trays should be used.

The bottom of the container should be covered by a medium suitable for pupation. This is done to provide the larvae with a suitable pupation medium, and to absorb excessive moisture from the fruits. The medium used can be sawdust, sterilized sand or vermiculite.

Inside the container, a mesh wire screen can be placed several centimeters above the medium, which will hold the fruit, but will allow the larvae to pass through to pupate in the medium.

The containers should be covered with a fine screen or a cloth to keep out the vinegar flies, *Drosophila* species.

Each container should have a serial number, which is registered and any information pertaining to infestation, as well as emerging flies and/or parasitoids can be recorded accordingly in a fruit control data sheet. All emerging flies, pupae and/or parasitoids are placed in vials together with the respective sample number and should be sent to the taxonomist for proper identification.

7. Record Keeping

In order to use the results of the fruit collection in an optimal way, as much information as possible should be written down. An example of an information sheet is given in Table 5.

The following information is needed:

- date of collection
- location, either street, field number, preferably locations taken with GPS
- fruit species, variety
- number of fruits and weight
- results, i.e. number and species of flies, pupae, parasitoids, etc.

Routine analysis of the information should be conducted and periodic reports submitted to higher management within the programme. Information must be kept updated at all times and available for consultation.

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Chemical control.

Table 5. Example of fruit collection records in year 2003

2003									
sample number	longitude	latitude	date	fruit species	location	district	number of fruits	weight in grams	date of check + results
F 12526	-55.10595087	5.86223698	6/1/03	carambola	Paramaribo		2	372	3/2=no infestation
F 12527	-55.62862715	5.841094919	8/1/03	rose apple	Saramacca	Damboentong	11	193	3/2=no infestation
F 12528	-55.58593081	5.83407332	8/1/03	carambola	Saramacca	Damboentong	5	400	3/2=1 pupa
F 12531	-55.48453937	5.79828613	8/1/03	carambola	Saramacca	Groningen	5	355	3/2=48 Bactrocera+13 pupae
F 12560	-55.08172272	5.18207252	17/1/03	Eugenia prob. Florida	Brokopondo	Klaaskreek	8	55	3/2=2 Anastrepha
F 12595	-55.1469525	5.7449643	29/1/03	carambola	Para	Highway	6	250	12/2=143 Bactrocera+1 Anastrepha+4 pupae
F 12596	-55.11198068	5.70446292	30/1/03	carambola	Wanica	Highway	5	197	12/2=322 Bactrocera+10 pupae
F 12597	-55.16388863	5.7718052	30/1/03	carambola	Wanica	Dijkveld	5	274	12/2=47 Bactrocera+14 pupae
F 12598	-55.10202985	5.70135973	30/1/03	carambola	Para		5	227	12/2=64 Bactrocera+4 pupae
F 12608	-55.50315199	5.42135882	4/2/03	mispel (small)	Para	Poika	13	24	17/2=no infestation
F 12609	-55.50492762	5.41689022	4/2/03	hogplum	Para	Poika	17	255	25/2=30 Anastrepha+24 parasites+16 pupae
F 12610	-55.51018242	5.41329199	4/2/03	hogplum	Para	Poika	14	224	17/2=no infestation
F 12611	-55.34452584	5.24771448	4/2/03	hogplum	Para	Kwakoe Gron	15	120	28/2=10 Anastrepha+18 parasites+1 pupa
F 12612	-55.32295884	5.45170492	4/2/03	carambola	Para	Matta	3	125	17/2=no infestation
F 12613	-55.58000835	5.83709509	4/2/03	rose apple	Saramacca	Catharina Sophia	6	183	25/2=14 Bactrocera+4 pupae
F 12614	-55.54230608	5.82701649	4/2/03	rose apple	Saramacca	Catharina Sophia	10	352	17/2=no infestation
F 12615	-55.51820432	5.80285045	4/2/03	rose apple	Saramacca	Damboentong	6	125	17/2=no infestation
F 12616	-55.48952377	5.79379352	4/2/03	rose apple	Saramacca	Groningen	10	205	28/2=no infestation
F 12617	-55.58679609	5.82778764	4/2/03	carambola	Saramacca	Damboentong	8	525	17/2=no infestation
F 12618	-55.48382902	5.80563027	4/2/03	West-Indian cherry	Saramacca	Groningen	15	125	17/2=no infestation
F 12619	-55.58818318	5.82804555	4/2/03	carambola	Saramacca	Catharina Sophia	5	660	17/2=no infestation
F 12620	-55.54881544	5.82246134	4/2/03	Syzygium sp.	Saramacca	Catharina Sophia	6	65	17/2=no infestation

ANNEX 3

GUIDELINES ON CORRECTIVE ACTION PLANS

The detection of a single specimen (adult or immature) of the target fruit fly species in the FF-PFA triggers enforcement of a corrective action plan.

The objective of the corrective action plan is to determine the phytosanitary status of the detection (actionable or non actionable) and, in case of an outbreak, to ensure eradication of the pest to enable reinstatement of the FF-PFA.

The corrective action plan should be prepared taking into account the biology of the target fruit fly species, the geography of the FF-PFA area, climatic conditions and host distribution within the area.

The elements required for implementation of a corrective action plan include:

- legal framework under which the corrective action plan can be applied
- criteria for the declaration of an incursion or outbreak
- time scales for the initial response
- technical criteria for delimiting trapping, fruit sampling, application of the eradication actions and establishment of regulatory measures
- availability of sufficient operational resources
- identification capability
- effective communication within the NPPO and with the trading partner, including provision of contact details of all parties involved.

Actions to apply the corrective action plan

1. Determination of the phytosanitary status of the detection (actionable or non actionable)

Immediately after the detection, a delimiting survey, which includes additional traps, and usually fruit sampling as well as an increased trap inspection rate, should be implemented to assess if the detection is an incursion or an outbreak. This action is also used to determine the size of the affected area.

2. Suspension of FF-PFA status

If the detection is a transient non actionable occurrence (ISPM No. 8: *Determination of pests status in an area*), no further action is required. If the detection is an outbreak, the FF-PFA status in the affected area should be terminated. The affected area may be limited to parts of the FF-PFA or may be the whole of the FF-PFA.

3. Implementation of control measures in the affected area

Specific eradication actions should be immediately implemented in the affected area(s). Eradication actions may include:

- selective insecticide-bait treatments
- sterile fly release if required
- male annihilation technique
- destruction of affected fruit.

Phytosanitary measures should be immediately enforced, including cancellation of shipments of fruit commodities from the affected area and operation of road stations to prevent the movement of infested fruit from the affected area to a pest free area. Other measures could be adopted if agreed by the importing country, for example treatment, increased surveys, supplementary trapping.

4. Criteria for reinstatement of a FF-PFA after an outbreak and actions to be taken

The criteria for determining that eradication has been successful should be based on having no further detections for at least three life cycles of the target pest species. The time period will depend on the biology of the species and the prevailing environmental conditions. Once the criteria have been fulfilled the following actions should be taken:

- Notification of appropriate agencies
- Reinstatement of normal surveillance levels
- Reinstatement of the FF-PFA.

5. Notification of relevant agencies

Relevant NPPOs, other agencies and trading partners should be kept informed at all times as appropriate.

MOST IMPORTANT FRUIT FLY PESTS

Scientific name	English common name	Major hosts ¹
<i>Anastrepha fraterculus</i> ² (Wiedemann)	South American fruit fly	Apple (<i>Malus pumila</i>), avocado (<i>Persea americana</i>), carambola (<i>Averrhoa carambola</i>), citrus (<i>Citrus</i> spp.), coffee (<i>Coffea arabica</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), Myrtaceae, peach (<i>Prunus persica</i>), pear (<i>Pyrus communis</i>)
<i>A. grandis</i> (Macquart)	South American cucurbit fly	Cucurbits (including melon (<i>Cucumis melo</i>), pumpkin (<i>Cucurbita pepo</i>))
<i>A. ludens</i> (Loew)	Mexican fruit fly	Citrus (<i>Citrus</i> spp.), mango (<i>Mangifera indica</i>), peach (<i>Prunus persica</i>), pear (<i>Pyrus communis</i>)
<i>A. obliqua</i> (Macquart)	West Indian fruit fly	Mango (<i>Mangifera indica</i>), hog plum (<i>Ximenia americana</i>), red mombin (<i>Spondias purpurea</i>), carambola (<i>Averrhoa carambola</i>)
<i>A. striata</i> Schiner	Guava fruit fly	Guava (<i>Psidium guajava</i>), <i>Psidium</i> spp.
<i>A. suspensa</i> (Loew)	Caribbean fruit fly	Apple (<i>Malus pumila</i>), avocado (<i>Persea americana</i>), bell pepper (<i>Capsicum annuum</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), orange (<i>Citrus sinensis</i>), papaya (<i>Carica papaya</i>)
<i>Bactrocera carambolae</i> Drew & Hancock	Carambola fruit fly	Carambola (<i>Averrhoa carambola</i>), <i>Syzygium</i> spp., guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>)
<i>B. caryeae</i> (Kapoor)		Citrus (<i>Citrus</i> spp.), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>)
<i>B. correcta</i> (Bezzi)	Guava fruit fly (Asian)	Jujube (<i>Ziziphus jujuba</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), peach tropical almond
<i>B. cucumis</i> (French)	Cucumber fruit fly	Cucurbits (including cucumber (<i>Cucumis sativus</i>), pumpkin (<i>Cucurbita pepo</i>), squash, zucchini), papaya (<i>Carica papaya</i>), tomato (<i>Lycopersicon esculentum</i>)
<i>B. cucurbitae</i> (Coquillett)	Melon fly	cucurbits (including cucumber (<i>Cucumis sativus</i>), pumpkin (<i>Cucurbita pepo</i>), squash watermelon)
<i>B. dorsalis</i> ³ (Hendel)	Oriental fruit fly	Apple (<i>Malus pumila</i>), banana (<i>Musa paradisiaca</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), papaya (<i>Carica papaya</i>), peach (<i>Prunus persica</i>), pear (<i>Pyrus communis</i>)
<i>B. kandiensis</i> Drew & Hancock	Unkown	Mango (<i>Mangifera indica</i>)
<i>B. latifrons</i> (Hendel)	Solanum (Malaysian) fruit fly	Bell pepper (<i>Capsicum annuum</i>), chilli (<i>Capsicum</i> spp.), eggplant (<i>Solanum melongena</i>), tomato (<i>Lycopersicon esculentum</i>)
<i>B. minax</i> (Enderlein)	Chinese citrus fruit fly	Citrus (including grapefruit (<i>Citrus paradise</i>), kumquat (<i>Fortunella</i> sp.), lemon (<i>Citrus limon</i>) and orange (<i>Citrus sinensis</i>))
<i>B. musae</i> (Tryon)	Banana fruit fly	Banana (<i>Musa paradisiaca</i>), guava (<i>Psidium guajava</i>), papaya (<i>Carica papaya</i>)
<i>B. neohumeralis</i> (Hardy)	Lesser Queensland fruit fly	Apple (<i>Malus pumila</i>), citrus (<i>Citrus</i> spp.), coffee (<i>Coffea arabica</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), peach (<i>Prunus persica</i>), plum (<i>Prunus domestica</i>)
<i>B. occipitalis</i> (Bezzi)	Unkown	Guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>)
<i>B. oleae</i> (Rossi)	Olive fruit fly	Olive (<i>Olea europaea</i>)
<i>B. papayae</i> ⁴ Drew & Hancock	Asian papaya fruit fly	Banana (<i>Musa paradisiaca</i>), carambola (<i>Averrhoa carambola</i>), coffee (<i>Coffea arabica</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), papaya (<i>Carica papaya</i>)
<i>B. philippinensis</i> Drew & Hancock	Philippines fruit fly	Breadfruit (<i>Artocarpus altilis</i>), Malay apple (<i>Syzygium malaccense</i>), mango (<i>Mangifera indica</i>), papaya (<i>Carica papaya</i>)
<i>B. pyrifoliae</i> Drew & Hancock		Guava (<i>Psidium guajava</i>), peach (<i>Prunus persica</i>), sand pear (<i>Pyrus communis</i>)

<i>B. tau</i> ⁵ (Walker)		Cucurbits (including angled luffa (<i>Luffa acutangula</i>), cucumber (<i>Cucumis sativus</i>), pumpkin (<i>Cucurbita pepo</i>)), Malay apple (<i>Syzygium malaccense</i>)
<i>B. tryoni</i> (Froggatt)	Queensland fruit fly	Apple (<i>Malus pumila</i>), citrus (<i>Citrus</i> spp.), guava (<i>Psidium guajava</i>), Japanese persimmon (<i>Diospyros kaki</i>), mango (<i>Mangifera indica</i>), olive (<i>Olea europaea</i>), papaya (<i>Carica papaya</i>), peach (<i>Prunus persica</i>)
<i>B. tsuneonis</i> (Miyake)	Japanese orange fruit fly	Citrus (including kumquat (<i>Fortunella</i> sp.), orange (<i>Citrus sinensis</i>), tangerine (<i>Citrus deliciosa</i>)) and <i>Fortunella</i> spp.
<i>B. umbrosa</i> (Fabricius)	Artocarpus (Breadfruit) fruit fly	Artocarpus spp (including breadfruit (<i>Artocarpus altilis</i>), chempedak (<i>Artocarpus kemando</i>), jackfruit (<i>Artocarpus heterophyllus</i>))
<i>B. xanthodes</i> (Broun)	Pacific fruit fly	Breadfruit (<i>Artocarpus altilis</i>), granadilla (<i>Passiflora ligularis</i>), jackfruit (<i>Artocarpus heterophyllus</i>), papaya (<i>Carica papaya</i>)
<i>B. zonata</i> (Saunders)	Peach fruit fly	Date palm (<i>Phoenix dactylifera</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), orange (<i>Citrus sinensis</i>), papaya (<i>Carica papaya</i>), peach (<i>Prunus persica</i>)
<i>Ceratitis capitata</i> (Wiedemann)	Medfly, Mediterranean fruit fly	Apple (<i>Malus pumila</i>), apricot (<i>Prunus armeniaca</i>), citrus (<i>Citrus</i> sp.), coffee (<i>Coffea arabica</i>), guava (<i>Psidium guajava</i>), mango (<i>Mangifera indica</i>), peach (<i>Prunus persica</i>), pear (<i>Pyrus communis</i>), persimmon (<i>Diospyros kaki</i>), tropical almond (<i>Terminalia catappa</i>)
<i>Ceratitis rosa</i> Karsch	Natal fruit fly	Apple (<i>Malus pumila</i>), avocado (<i>Persea Americana</i>), citrus (<i>Citrus</i> sp.), guava (<i>Psidium guajava</i>), lychee (<i>Litchi chinensis</i>), mango (<i>Mangifera indica</i>), papaya (<i>Carica papaya</i>), peach (<i>Prunus persica</i>)
<i>Dacus ciliatus</i> Loew	Ethiopian fruit fly	Cucurbits (including cucumber (<i>Cucumis sativus</i>), pumpkin (<i>Cucurbita pepo</i>), squash, watermelon (<i>Citrullus lanatus</i>))
<i>D. frontalis</i> Becker		Cucurbits (including cucumber, (<i>Cucumis sativus</i>), pumpkin (<i>Cucurbita pepo</i>), squash, watermelon (<i>Citrullus lanatus</i>))
<i>Rhagoletis cerasi</i> Loew	European cherry fruit fly	Cherries (<i>Prunus avium</i>) (including black, mahaleb (<i>Prunus mahaleb</i>), sour and sweet)
<i>R. completa</i> Cresson	Walnut husk fly	Walnuts (<i>Juglans regia</i>) (including black, Californian and Hinds' walnut), peach (<i>Prunus persica</i>)
<i>R. indifferens</i> Curran	Western cherry fruit fly	Choke cherry (<i>Prunus virginiana</i>), Japanese plum (<i>Prunus triflora</i>), Klamath plum (<i>Prunus subcordata</i>), sweet cherry (<i>Prunus avium</i>)
<i>Rhagoletis pomonella</i> (Walsh)	Apple maggot	Apple (<i>Malus pumila</i>), peach (<i>Prunus persica</i>), pear (<i>Pyrus communis</i>)
<i>Toxotrypana curvicauda</i> Gerstaecker	Papaya fruit fly	Papaya (<i>Carica papaya</i>)

¹ Major hosts only, see Bibliography for further information.

² *Anastrepha fraterculus* is a complex of undescribed species

³ *B. dorsalis* occurs as a species complex in the Asian Pacific and includes: *B. carambolae*, *B. caryae*, *B. dorsalis*, *B. kandiensis*, *B. occipitalis*, *B. papayae*, *B. philippinensis*, *B. pyrifoliae*.

⁴ *B. papayae* is not a distinct species from *B. dorsalis* (Naeole, C.K.M. & Haymer, D.S. (2003) Use of oligonucleotide arrays for molecular taxonomic studies of closely related species in the oriental fruit fly (*Bactrocera dorsalis*) complex. Molecular Ecology Notes 3, 662-665; Tan, K. H. (2003) *Bactrocera dorsalis* complex and its problem in control. Pp 103 – 112. In Recent Trends on Sterile Insect Technique and Area-Wide Integrated Pest Management - Economic Feasibility, Control Projects, Farmer Organization and *Bactrocera dorsalis* Complex Control Study - Research Institute for the Subtropics, Okinawa, Japan.)

⁵ *B. tau* is a complex of undescribed species in Asia.

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**Proposed revision to the methyl bromide (MB) fumigation schedule in Annex I of
ISPM No. 15 (Guidelines for regulating wood packaging material in international trade)**

Comments:

These proposed changes are considered necessary due to concerns raised at various meetings of the ICPM about efficacy of the methyl bromide fumigation schedule in Annex I, Approved Measures Associated with Wood Packaging Material, of ISPM No. 15. (*Guidelines for regulating wood packaging material in international trade*)

Existing text:

Temperature	Dosage rate	Minimum concentration (g/m ³) at:			
		0.5hrs.	2hrs.	4hrs.	16hrs.
21°C or above	48	36	24	17	14
16°C or above	56	42	28	20	17
11°C or above	64	48	32	22	19

The minimum temperature should not be less than 10⁰C and the minimum exposure time should be 16 hours.

Proposed revision:

Temperature	Dosage g/m ³	Minimum concentration (g/m ³) at:			
		<u>2 hrs.</u>	<u>4 hrs.</u>	<u>12 hrs.</u>	<u>24 hrs.</u>
21° C or above	48	<u>36</u>	<u>31</u>	<u>28</u>	<u>24</u>
16° C or above	56	<u>42</u>	<u>36</u>	<u>32</u>	<u>28</u>
<u>10° C</u> or above	64	<u>48</u>	<u>42</u>	<u>36</u>	<u>32</u>

The minimum temperature should not be less than 10⁰ C and the minimum exposure time should be 24 hours.

Participants list

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