REPORT

Rome, Italy, 30 April - 04 May 2007

Standards Committee
May 2007

CONTENTS

1. OPENING OF THE MEETING

1. Mr Kenmore, the new Secretary of the International Plant Protection Convention (IPPC), welcomed the participants to the Standards Committee (SC) and opened the meeting. He invited the SC to observe a minute of silence in memory of an SC member, Mr Michael Philips, who died recently.

2. The Secretary welcomed three new SC members, Mr Hajjar (Syria), Ms Melcho (Uruguay) and Mr Sakala (Zambia) as well as Ms Bast-Tjeerde (Vice-chairperson of the CPM) and Mr Miyazako (Japan, observer).

3. He reported that new funding guidelines had been implemented. The IPPC Secretariat now provided travel assistance to participants attending IPPC meetings based on the World Bank system of country classification. Participants from low and lower-middle income economies will be funded for both airfare and daily subsistence allowance, while only the airfare will be funded for participants from upper-middle income economies.

4. He expressed special thanks to stewards, who have a crucial role in answering the request of all members for an increased number of standards, especially technical standards.

5. He noted that the meeting had a huge agenda and encouraged the SC to send back draft ISPMs for which further redrafting was needed.

6. In conclusion, the Secretary thanked the contracting parties for allowing the SC members to contribute their expertise to the work of this committee.

7. The Chair welcomed SC members. It was noted that SC members from India, South Africa and Tonga were not able to attend the meeting.

2. ADOPTION OF THE AGENDA

8. The provisional agenda was adopted as shown in Appendix 1 and the order of agenda items was agreed to.

9. The report from the November 2006 meeting was presented and no comment was raised.

10. Mr Sakamura from Japan was elected as the rapporteur for the meeting.

3. ITEMS ARISING FROM CPM-2 (MARCH 2007)

11. The Secretariat reviewed the topics of relevance for the SC which had been discussed by the Second Session of the Commission on Phytosanitary Measures (CPM-2) and noted several points would be discussed under other SC agenda points. Several appendices of the CPM-2 report, including standards adopted in 2007, were distributed to the members. Of particular interest was a statement of commitment that would be used for future nominations of participants to IPPC meetings, but could also prove useful for SC members to better understand their duties and for use in discussion with their respective hierarchy. The Secretariat also informed the SC that several documents that had been put forward to the CPM by the SC were deferred to a Focus Group on the review of the standard setting process. The terms of reference for this Focus Group were also distributed, noting that comments on documents to be reviewed by the Focus Group were invited until 1 May 2007.

4. STANDARD SETTING WORK PROGRAMME

4.1 Standard setting work programme update

12. The Secretariat presented the current work programme and noted that 77 out of 86 topics on the work programme had been given a high priority. Guidance was needed on which of these topics should be worked on first. The SC entrusted the Secretariat to define which topics should be considered first. The Secretariat also noted that, if no additional resources were available in 2008, some technical panels might have to be put on hold. This might affect primarily the TPFQ and TPFF, since the TPPT and TPDP had started producing standards under the fast-track process and the TPG had ongoing tasks in relation to draft ISPMs. The SC may reconsider these possible priorities in light of the ongoing work of the TPFQ.

13. There was some discussion on how to reduce costs. Holding additional meetings of drafting groups is costly. The SC recognized that some topics are more complex than others, and might need more than one meeting. However, it was noted that convening additional meetings on one topic used resources which would have allowed work on a new topic. The SC felt that the steward should report back to the SC on the need for an additional meeting and seek guidance. This could be done via e-mail. One member suggested that in cases where an EWG was not able to resolve some issues because of fundamental differences of opinion at one meeting, these points could be referred to the SC for guidance. The Secretariat noted the ICPM/CPM decision that priority should be given to standard setting topics on which work had already started. It was noted that some groups might not need five days to complete their tasks, but the Secretariat noted that it was difficult to estimate the time needed before the meeting and that the cost would not be much lower for a three day meeting. In some cases it was noted that if an additional meeting was required, consideration should be given to reducing the number of drafting group members to help reduce costs. The SC requested the Secretariat to pass these points on to the Focus Group for its consideration.

14. A document on the status of explanatory documents was distributed that reminded the SC that further work in this area was on hold until additional resources became available.

4.2 Adjustments to stewards

15. The stewards were reviewed and the following replacements of stewards were agreed (see also Appendix 2):

- Mr Ringolds Arnitis (Latvia) the steward for *alternative strategies to methyl bromide* would be replaced by Mr Mohammad Katbeh Bader (Jordan)
- Mr Ringolds Arnitis (Latvia) the steward for *debarked and bark-free wood*, although he will be retiring from the SC at the end of the year, agreed to continue as steward for this topic
- Mr Mazlan Saadon (Malaysia) the steward for *post-entry quarantine facilities* would be replaced by Ms Beatriz Melcho (Uruguay)
- Mr David Opatowski (Israel) the steward for *trapping procedures for fruit flies* would be replaced by Mr Walther Enkerlin (TPFF)
- Mr Odilson Ribeiro e Silva (Brazil) agreed to continue as the steward for the two other fruit fly topics (*suppression and eradication of fruit flies* and *host susceptibility for fruit flies*) but once the draft ISPMs were near completion he would propose a TPFF member to the SC to take over his role as steward
- Mr Greg Wolff (Canada) agreed to continue as the steward for the forest quarantine topics but should more than one draft ISPM for which he is steward be presented for consultation in the same year he would propose a TPFQ member to the SC to take over his role as steward.

16. One member supported that stewards should be members of the SC. Others noted that the 25 SC members might not be able to serve as stewards for all the topics on the work programme, and noted that there might be a need to call upon members of expert drafting groups in specific cases.

17. It was noted that TP stewards might need assistance in cases where several standards for which they are responsible were at the same stage in the process. The concept of "assistant stewards" was discussed but the SC agreed that there would only be one type of steward. In cases where two stewards were selected for a standard, the steward who was also a SC member would take the lead role but work together with the second steward.

5. ISSUES REGARDING TECHNICAL PANELS

5.1 Review of technical panel membership

18. The Secretariat encouraged the SC of the need to carefully review the membership of TPs. In particular, some TP members do not have the time to dedicate to TP work, or have not been released for meetings since their nomination.

19. One member noted that it could be useful to have potential replacements to serve on TPs in cases where unanticipated absence of members may hold up the work of the TP. The Secretariat responded that this may not be necessary as the SC can replace a TP member at any time.

20. The draft terms of reference and rules of procedure of TPs that had been presented to CPM-2 provided that TP members would be nominated by NPPOs or RPPOs. The SC noted that two TPs benefited from having members from other organizations (IFQRG on the TPFQ and IAEA on the TPFF), and requested the Secretariat to forward this issue to the Focus Group to further consider it when discussing the draft terms of reference and rules of procedures for TPs.

21. The SC considered the role of invited experts participating in the work of TPs and acknowledged the benefit. These experts should be selected through consensus of the TP members.

Technical Panel on Diagnostic Protocols

22. The SC was reminded that an additional member, Mr Malipatil (Australia), had been approved in 2006 as an expert in quality assurance; he will participate for the first time at the 2007 meeting. The discipline lead in virology would be retiring and the TPDP would consider at its next meeting if another virologist is needed, and if the expertise on the TP is suitable. The steward of the TPDP will present some options to the SC for consideration at the November SC meeting.

Technical Panel on Forest Quarantine

23. No specific issues were raised in relation to the current membership on this TP.

24. Given the importance of work on bark in future TPFQ meeting(s), the steward noted that he would ask the TPFQ to consider having two experts from the original EWG on debarked and bark-free wood with practical experience of bark-related issues as invited experts.

Technical Panel on Fruit Flies

25. The SC noted that Mr Enkerlin (IAEA) had left his post and would be starting work with NAPPO in July 2007. After some discussion, the SC agreed that IAEA should be invited to nominate a staff member with suitable technical expertise in fruit flies (as described in the criteria for TPFF members), for consideration by the SC. The SC also agreed to modify the specification for the TPFF in order to mention that a suitably qualified expert from IAEA would be invited to become a member of the panel (Appendix 3). Regarding Mr Enkerlin's membership, it was noted that he had valuable expertise on fruit fly trapping and the SC agreed he could remain a member of the TPFF.

26. The TPFF was comprised of core members and extended members. The SC decided to just have one category of membership. It was also decided that prior to each TP meeting, the steward and Secretariat would discuss which expertise was needed for that meeting, and would identify members with the most relevant expertise in the topics to be discussed at that meeting who would then be given priority for financial assistance in accordance with the IPPC funding policy.

Technical Panel on Phytosanitary Treatments

27. The Secretariat noted that the workload for this TP was anticipated to be very large, particularly with the call for further treatments in 2007, and proposed that it might be necessary to add additional members. The Secretariat also stressed the value of the expertise provided by the invited experts at the last meeting in providing support to the TP and felt the use of such experts would be essential at future meetings.

28. The SC agreed that a call could be made for an additional member, after consultation with the TPPT for the expertise required.

Technical Panel on the *Glossary of phytosanitary terms*

29. The Secretariat noted that this TP had a limited composition, and it might be useful to consider the addition of more members to ensure continuity. The steward proposed that the TPG could discuss this issue and propose a mechanism for bringing other experts on to the panel either on a temporary or a permanent basis. However the SC noted that the current participation seemed suitable. It was noted that expertise of phytosanitary matters and knowledge of standards was as important as language for members of this TP.

6. TECHNICAL PANEL REPORTS AND EXECUTIVE SUMMARIES

6.1 Technical Panel on Diagnostic Protocols

30. The steward gave a brief introduction to the work of the TP and presented recommendations to the SC for its consideration.

31. The SC noted the recommendation by some countries at the Asia regional workshop on draft ISPMs that criteria should be produced for selecting priority pests for the development of a diagnostic protocol and had asked the TP to consider this at its next meeting. The SC also noted the Asia regional workshop's recommendation to add two pests the work programme of the TPDP (*Potato spindle tuber viroid* and *Pantonea (Erwinia) stewartii*). The SC asked the Secretariat to discuss this with the FAO regional plant protection officer, who would inform interested parties of the 2007 call for topics and priorities and encourage them submit these diagnostic protocols through that process.

32. The SC:

1. *Noted* that the first draft protocol (*Thrips palmi*) has been approved by the SC for member consultation by the fast track procedure. It would be sent for consultation once available in all FAO languages.
2. *Noted* the revised Instructions to authors (Annex 1 of the report of the TPDP meeting, October 2006).
3. *Noted* the authors of diagnostic protocols (Annex 2 of the report of the TPDP meeting, October 2006).
4. *Noted* the request by the TPDP for the IPPC Secretariat to call for further nominations for authors for *Gymnosporangium* spp. with expertise from Asia and North America.
5. *Noted* the revised working procedures of the TPDP (Annex 3 of the report of the TPDP meeting, October 2006).
6. *Approved* the revision to the Specification for Technical Panels No. 1 (2nd revision) (Annex 4 of the report of the TPDP meeting, October 2006) (Appendix 4).
7. *Noted* the work programme of the TPDP (Annex 5 of the report of the TPDP meeting, October 2006).
8. *Requested* the TPDP to produce criteria for setting priorities for the development of diagnostic protocols and report back to the SC.
9. *Requested* the Secretariat to communicate to the participants of Asia regional workshop on draft ISPMs that the SC would develop criteria for setting priorities for the development of diagnostic protocols and invite them to submit requests for diagnostic protocols through the regular call for topics and priorities.

6.2 Technical Panel on Forest Quarantine

33. The steward introduced the work of the TP and noted that the next meeting would be held in July in Moscow, where the work on revision to ISPM No. 15 (*Guidelines for regulating wood packaging material in international trade*) would continue.

34. The SC:

1. *Agreed* that the *Ips* genus diagnostic protocol should include methods for identification of the genus *Ips* and also methods for quarantine species that are difficult to distinguish, and *requested* the TPFQ to provide guidance to the TPDP on this topic.
2. *Noted* the recommendations of the TPFQ and the representative of the Montreal Protocol produced during the Montreal Protocol session (Annex 2 of the report of the TPFQ meeting, June 2006).
3. *Noted* the work programme of the TPFQ (Annex 4 of the report of the TPFQ meeting, June 2006).

6.3 Technical Panel on Fruit Flies

35. The steward updated the SC of the work of the TPFF and noted that the next meeting would discuss guidelines on trapping procedures. At its last meeting, the TP had identified that they did not have sufficient expertise in trapping of *Bactrocera* species in the Asia/Pacific region and had recommended that an expert in this topic should be invited to the next meeting.

36. The SC discussed the recommendation by the TP on publication of all fruit fly standards in one volume once they have all been adopted. Members of the SC recognized the value for fruit fly workers in having all the standards together, but also noted that it was important to have access to the other ISPMs when reading the fruit fly ISPMs. Members of the SC noted that there were other publication issues which would need to be addressed in the future, such as whether diagnostic protocols and treatments should be published in separate volumes. The SC therefore decided that the publication of fruit fly standards should be addressed at a later date after the different texts had been adopted.

37. The SC:

1. *Agreed* to the priorities for fruit fly standards (section 5 of the report of the TPFF meeting, September 2006).
2. *Agreed* that an expert with expertise in trapping of *Bactrocera* species in the Asia/Pacific regions should be invited to the next TPFF meeting.
3. *Noted* the work programme of the TPFF (Annex 2 of the report of the TPFF meeting, September 2006).

6.4 Technical Panel on Phytosanitary Treatments

38. The steward informed the SC of the work of the TP at its meeting in December 2006. He congratulated the TP on the work achieved in reviewing the treatment submissions.

39. The SC discussed the priorities proposed by the TP for the call for additional treatment submissions and the priorities for further evaluation of treatment submissions. One member informed the SC of the concerns in Europe in that it appeared that the IPPC is focusing on irradiation treatments as all 14 of the treatments currently proposed for member consultation are irradiation treatments and another call for new treatments will include a call for irradiation treatments. He acknowledged the importance of irradiation treatments as alternatives to methyl bromide and stressed the importance of having the IPPC offer a broad spectrum of types of treatments. The SC decided that the priority for further work on treatments should be:

- first: treatments for inclusion in ISPM No. 15
- second: treatments for fruit flies
- third: irradiation treatments that are alternatives to methyl bromide in the following categories:
  - treatments for forest products
  - treatments for thrips and/or mites on fruit and vegetables, and
  - treatments for whiteflies, thrips and/or mites on cut flowers.

40. Regarding priorities for further research on phytosanitary treatments, the SC noted the recommendations from the Asia regional workshop on draft ISPMs for further work on disinfestations of fruit from fruit flies. The SC asked the Secretariat to seek clarification on the type of research that is required. The SC also noted the priorities for further research on irradiation treatments identified by the TP.

41. The Secretariat informed the SC that a letter had been received from the German NPPO regarding the submission of an alternative treatment to methyl bromide under ISPM No. 15. The SC noted the different roles of the TPPT and TPFQ in considering treatment submissions for ISPM No. 15. The TPPT evaluated the efficacy of a treatment and the TPFQ evaluated the practical use of the treatment for wood packaging material. The SC agreed that every effort would be made to consider the submissions of ISPM No. 15 treatments as they were urgently needed. Both the TPFQ and TPPT were requested to expedite their work on reviewing submissions of new ISPM No. 15 treatments that had supporting data. The SC recommended that both panels could conduct as much of their work as possible by e-mail consultation. The SC noted that, although efforts would be made to speed up the process of adopting alternative treatments for ISPM No. 15 at CPM-3, it might not be achievable especially because the TPPT would meet in December 2007.

42. The SC:

1. *Agreed* to the publication of adopted treatments alphabetically by treatment title with three indexes (section 7.3 of the report of the TPPT meeting, December 2006).
2. *Agreed* to another call for treatments with the priorities proposed above.
3. *Requested* the Secretariat to seek clarification from the participants of the Asia regional workshop on draft ISPMs on the research required on the disinfestation of fruits from fruit flies.
4. *Noted* the research priorities for irradiation treatments identified by the TPPT.
5. *Noted* the work programme of the TPPT (see Annex 4 of the report of the TPPT meeting, December 2006) and *required* the TPPT to consider the treatment submissions in the following priority order: ISPM No. 15, fruit fly treatments and irradiation treatments.
6. *Requested* the TPFQ and TPPT to consider ISPM No. 15 treatment submissions urgently.
7. *Requested* the Secretariat to reply to the letter from the German NPPO and inform them of the SC actions in response to the letter.

6.5 Technical Panel on the *Glossary of phytosanitary terms*

43. The steward updated the SC on the work of the TPG. The TP had produced a work programme which listed the regular tasks undertaken annually and the one-off tasks. The SC discussed the use of acronyms in ISPMs and finally agreed, for terms that are included as acronyms in the Glossary, to continue the current practice of writing them out in full at the first use in an ISPM.

44. The steward introduced a document on the interpretation of terminology of Convention on Biological Diversity (CBD) terms in relation to ISPM No. 5 (*Glossary of phytosanitary terms*) and requested guidance from the SC on whether the document should be processed as an explanatory document or a supplement to ISPM No. 5. The SC considered that there would be benefits in having such guidance as a supplement to ISPM No. 5 and requested the TPG to reformat the document for submission as a supplement to ISPM No. 5 at the May 2008 SC meeting. The SC considered that this topic was not new to the TPG work programme as it had been worked on over the last year.

45. The steward introduced a further paper on the use of the term *regulated pests*. The SC noted that the reason for the guidance was because there was confusion regarding use of terms in relation to pests regulated in international trade as defined by the IPPC and pests regulated domestically which are not defined under the IPPC. At the request of the SC the steward redrafted the paper, taking into account the SC comments, and added a proposed definition for domestic regulations. The SC reviewed the new proposal but returned it to the TPG for further consideration, to review the use of agreed interpretations and to format it as a supplement to ISPM No. 5.

46. The SC:

1. *Agreed* to the nature of the regular tasks of the TPG (see Appendix 2, Table 1 of the report of the TPG meeting, October 2006):
   - preparing responses for consideration by stewards and the SC to:
     - comments from member consultation on definitions in draft ISPMs or amendments to ISPM No. 5
     - requests for new definitions made during member consultation
   - proposing new or revised terms for member consultation in the following year (noting that glossary terms in definitions for country consultation will be bolded to clearly identify which terms are already defined in the Glossary)
   - reviewing draft ISPMs for possible inconsistencies
   - addressing issues in relation to language (accuracy of translation of definitions in draft ISPMs before member consultation).
2. *Agreed* that the review of adopted ISPMs will start as resources become available.
3. *Noted* that the development of the annotated glossary (explanatory document) continues (see section 9 of the report of the TPG meeting, October 2006) and *noted* the suggestion that it should be updated regularly once approved.
4. *Agreed* to TPG members taking part in the review of language versions of the Glossary.
5. *Requested* the TPG to develop further the document on the interpretation of CBD terms as a supplement to ISPM No. 5, and submit it to the May 2008 SC meeting for consideration for member consultation.
6. *Reviewed* a paper on regulated pests, *returned* an amended version to the TPG for further consideration and *requested* to TPG to present a revised text at the November 2007 SC meeting.
7. *Agreed* that the following changes will be made in the 2007 version of ISPM No. 5:
   - correction to the definition of *occurrence* (see also section 9 of the report of the TPG meeting, October 2006)
   - addition of references to Supplement No. 2 of the Glossary for definitions which refer to economic impact, which includes environmental considerations (see also section 6 of the report of the TPG meeting, October 2006).
8. As per CPM-2 requests in regards to terms and definitions, *requested* the TPG to:
   - *consider* the development of definitions for the terms *hazard* and *initiation*.
   - *consider* further the definitions for *phytosanitary security (of a consignment)* and *reference specimen(s)*.
9. As per the November 2006 SC decision, *requested* the TPG to further consider the definition for *compliance procedure* (see paragraph 41 of the report of the SC, November 2006).

10. *Reviewed* the TPG proposal to consider development of definitions for the following terms proposed during member consultation 2006 (for details on each term, see Appendix 2, Table 3 of the report of the TPG meeting, October 2006) and *requested* the TPG to consider development of definitions for these terms:
    - corrective action plan
    - incidence
    - natural range
    - risk communication
    - uncertainty
    - regulatory control.
11. *Agreed* to the TPG recommendation that no definitions are needed on the following terms proposed during member consultation 2006 (for details on each term, see Appendix 2, Table 3 of the report of the TPG meeting, October 2006):
    - alien plants
    - sites and places of production
    - stated efficacy
    - phytosanitary treatment
    - bark-free (noting that this recommendation does not apply to the work on the draft definition for bark-free wood)
    - delimited area
    - official recognition
    - minimal impact; modification; transparency; harmonization; risk analysis; managed risk; non-discrimination; cooperation; and equivalence.

7. DRAFT ISPMs FOR REVIEW IN PREPARATION FOR MEMBER CONSULTATION

7.1 Amendments to ISPM No. 5 (*Glossary of phytosanitary terms*)

47. The steward introduced the 2007 amendments to the Glossary proposed by the TPG. He explained the reasons for the proposed new, revised and deleted terms. The SC made comments on the terms and definitions as outlined below.

48. In the definition of *prevalence*, there was confusion over the use of the word *population* and whether it referred to the host or pest population. In addition there were concerns about reference to an occurrence of a pest as expressed by a *defined index*. This could be interpreted to require a numerical value, whereas pest occurrence could be expressed by levels such as high, low, infrequent etc. The TPG members present at the meeting modified the definition and the SC agreed that the redrafted definition was suitable for country consultation.

49. The proposed definition for *tolerance level* included reference to phytosanitary actions. Since these are done for regulated pests, the term would be limited in its usage. The TPG members present at the meeting modified the definition and the SC agreed that the redrafted definition was suitable for country consultation.

50. The list of terms proposed for deletion was agreed to by the SC. Regarding the deletion of the term *exotic*, which had been proposed by the TPG in particular because in Spanish and French the same word was used for *exotic* and *alien*, and that the term *non-indigenous* could be used instead of exotic, one member of the SC originally opposed to deletion, but then agreed to the deletion provided that suitable wording is included in the document to be prepared as a supplement to ISPM No. 5 on interpretation of CBD terminology (see section 6.5) to specify that *exotic* and *non-indigenous* could be considered as synonyms.

51. The SC:

1. *Approved* the 2007 amendments to the *Glossary of phytosanitary terms* for member consultation (Appendix 5).

7.2 Appropriate level of protection (supplement to ISPM No. 11)

52. The SC did not have time to review this draft ISPM; it will be put on the agenda of the May 2008 meeting. SC members were invited to send their comments to the Secretariat no later than 15 September 2007. The steward will review these comments and revise the draft ISPM as appropriate.

7.3 Not widely distributed (supplement to ISPM No. 5)

53. The SC did not have time to review this draft ISPM; it will be put on the agenda of the May 2008 meeting. SC members were invited to send their comments to the Secretariat no later than 15 September 2007. The steward will review these comments and revise the draft ISPM as appropriate.

7.4 Developing a strategy to reduce or replace the use of methyl bromide for phytosanitary purposes

54. The Chair of the SC welcomed Ricardo Labrada, FAO's focal point for methyl bromide substitution (FAO Plant Protection Service), to participate in the discussion on this draft ISPM. The steward informed the SC of the background to the development of the draft ISPM. He noted that the EWG had benefited from the input from members who had experience with methyl bromide issues and the Montreal Protocol, in particular one member who was a representative of the Ozone Secretariat of the Montreal Protocol.

55. The IPPC Secretariat informed the SC that, in addition to the draft ISPM, the EWG had recommended that the "Recommendation on the future of methyl bromide for phytosanitary purposes" adopted by ICPM-5 (2003) be updated. The EWG had produced a number of points to be considered when doing this. The Secretariat explained that there is no provision for an EWG to make recommendations directly to the CPM and that this topic was outside the mandate of the SC. The Secretariat would develop these points further with input from the EWG and other interested experts for consideration by the SPTA in 2007, and submit an updated text for adoption by CPM-3.

56. Some members of the SC had concerns that the draft ISPM was not really a standard and indicated that it appeared to represent a policy statement, rather than guidance for NPPOs. They recommended that the content should be presented directly to the CPM as a proposed policy on alternatives to methyl bromide, rather than as a draft ISPM.

57. The SC recognized the importance of the topic and most members were keen to approve the document for member consultation. The SC, exceptionally, decided to redraft parts of the draft ISPM and agreed to submit the draft for member consultation. In addition, the SC requested technical input from the TPPT to be reviewed along with member comments.

58. In redrafting, a major change was to reorder the section listing priorities for NPPOs and list as the highest priority the replacement of methyl bromide use for phytosanitary purposes. It was noted that reduction of methyl bromide emissions was a very important issue, but the section on this subject in the draft ISPM provided little detail on this topic. One SC member requested that members endeavour to obtain further information on the section and submit it during member consultation. Concern was also expressed that some terms used in this draft were not normally used in ISPMs.

59. During discussion on replacements for methyl bromide, the SC discussed the phytosanitary actions of refusing and destroying consignments and felt they might cause conflict with the WTO SPS Agreement as trade barriers. Some members pointed out that these phytosanitary actions, in cases of non-compliance, were covered in other ISPMs (e.g. ISPMs No. 13 and 15) but other members felt that these were viable alternatives to treating with methyl bromide and cited cases where compliance of imported consignments had increased after these phytosanitary actions were imposed, instead of treatment with methyl bromide at import. After discussion the SC decide to remove reference to these phytosanitary actions.

60. Some members had concerns about the treatments listed in the appendix as they had not been reviewed by the TPPT. The steward explained that these treatments were only listed as examples for NPPOs to consider in their search for urgently needed treatments that could replace methyl bromide, since the review process by the TPPT would take years. It was hoped that other examples may be submitted during country consultation.

61. The SC:

1. *Approved* the draft ISPM on *Developing a strategy to reduce or replace the use of methyl bromide for phytosanitary purposes* for member consultation (Appendix 6) and *requested* the Secretariat to submit the draft to the TPPT for its technical input.

7.5 Sampling of consignments

62. The steward reminded the SC that the draft prepared by the EWG in 2005 had first been presented to the SC in May 2006, but had not been considered.

63. Some SC members had concerns about some of the statistical concepts in the draft ISPM. However, the SC noted that the draft ISPM was developed to provide guidance for policy makers in NPPOs in how to best design sampling procedures that may be applied by their inspectors.

64. There was a request to provide references to the source of the statistical tables in the appendices.

65. The SC reworded the text to not include reference to interpretation of sampling results but rather to refer to the relevant sections in ISPM No. 23 (*Guidelines for inspection*).

66. The SC noted that there could be perceived problems during country consultation with the concept of tolerances for quarantine pests. The SC noted that NPPOs determined the tolerance based on pest risk analysis (PRA) and then worked out the sampling rate from this. It was noted that some pests will not establish readily, whereas for others a single individual would have a high probability of establishment. In some cases, therefore, small numbers of pests may be acceptable. In addition, the tolerance level also depended on the pathway; some pathways such as fresh fruit and vegetables being relatively low risk because of processing after entry, whereas others such as nursery stock would present a higher risk and small numbers of units may require to be subjected to post-entry quarantine testing in order to mitigate risks of pest establishment. The SC also noted that by sampling on a small proportion of consignments, it is possible that quarantine pests may enter in the un-sampled portion. In practice, sampling rates are often governed by the resources available.

67. One member of the SC pointed out that the draft provided good guidance on the statistical basis for designing sampling plans, but there may be problems for countries with the guidance on actions if pests are detected. One member suggested having a statistician invited to the next meeting but the Secretariat raised concerns that many experts would then have to be invited to each meeting.

68. The SC agreed it was important to send the draft ISPM for member consultation. The Chair was concerned about the possibility of receiving large numbers of comments. It was anticipated that most comments would relate to tolerance and its place in the standard.

69. The Secretariat was requested to make every effort possible to develop a supporting document explaining some of the controversial points discussed at the SC, and send this document at the same time as the draft for member consultation. The SC Vice-chairperson pointed out that the draft ISPM should be understandable without an explanatory document. The Secretariat noted the difficulties in commissioning such a document and having it translated in time for member consultation, but agreed to this approach.

70. The SC:

1. *Approved* the draft ISPM on *Sampling of consignments* for member consultation (Appendix 7).

7.6 Systems approaches for the pest risk management of fruit flies

71. The SC did not have time to review this draft ISPM; it will be put on the agenda of the May 2008 meeting. SC members were invited to send their comments to the Secretariat no later than 30 June 2007. The steward will review these comments and revise the draft ISPM as appropriate.

7.7 Classification of commodities into phytosanitary risk categories

72. The steward introduced the draft ISPM. He explained that a draft had been presented to the SC at the May 2006 meeting, but had been referred back to a small EWG with instructions for further drafting. He explained that new sections had been added, particularly to provide background information and revision to the risk categories.

73. Several SC members were concerned that the draft did not contain scientific information or technical justification that could be used as the basis for a PRA. Other SC members supported sending the draft ISPM for member consultation because it covered an important area of concern in international trade. Additionally

it was felt that guidance on phytosanitary risk categorization could prevent unnecessary administrative procedures and requests for phytosanitary certificates.

74. The SC noted that the draft ISPM used the term "commodity", but it concerned plants and plant products and this could cause confusion. However, it also noted that the draft ISPM related to categorization of risks from material being moved in international trade and the term "commodity" included reference to plants and plant products being moved for trade, and therefore the use of the term "commodity" was applicable.

75. The SC discussed the issue of contaminating pests and storage pests, which were not considered in the risk categorization process covered in the draft. Contaminating pests could be found associated with commodities after processing and were not applicable to the risk categorization covered by the draft ISPM.

76. The SC made a number of minor modifications to clarify the text and discussed possible changes to the annexes.

77. The SC:

1. *Approved* the draft ISPM on *Classification of commodities into phytosanitary risk categories* for member consultation (Appendix 8).

7.8 Debarked and bark-free wood (supplement to ISPM No. 5)

78. The steward presented a revision of the draft supplement to ISPM No. 5 on debarked and bark-free wood and explained that he had made changes based on discussions and decisions at CPM-2. He had restructured the draft text making it clear that the document did not provide technical justification for the removal of bark. He had also deleted text on risks associated with bark and tolerances for sizes of residual bark.

79. The Chair and SC members congratulated the steward for his extra work in producing the new draft ISPM in the short time since CPM-2.

80. There was considerable discussion on possible options for dealing with the draft supplement, firstly sending only the new or revised definitions (*bark, bark-free wood and debarked wood*) for member consultation, or sending the entire revised document for member consultation.

81. The steward for the TPFQ reminded the SC that the TP would be working on both the revision of ISPM No 15 and a new ISPM on international movement of wood. The issues covered by the sections on pest risk associated with bark, setting bark tolerances for debarked wood and bark-free wood as a phytosanitary measure could be addressed in these ISPMs when they are revised and drafted, respectively.

82. The SC noted that the TPFQ would be considering data gathered in the IPPC survey of bark on wood packaging material and also other scientific data on risks associated with bark on wood. This may provide further information which could form the basis for providing recommendations on pest risks and setting tolerances if appropriate.

83. Several members pointed out that the SC should follow the request of the CPM, which was to move this topic forward urgently, making every effort possible to present a revised draft to CPM-3.

84. Two members questioned the value of the draft text on debarking, and its suitability for consultation in its present form. One member felt that the text had not changed substantially from the previous draft and that, in view of the country comments and CPM-2 discussion on issues related to that version, pursuing consultation on this very similarly worded draft would prove to be problematic. The member further suggested proceeding with consultation on the definitions alone, and sending all the other components of the text to the TPFQ. Finally the SC decided to send the entire text for member consultation, but with the request that the TPFQ review the text during its July 2007 meeting and provide comments and/or recommendations to the SC for consideration during the November 2007 meeting.

85. In the future, if text on pest risk and setting tolerances was incorporated into other ISPMs, then the text in the supplement could be revised or adjusted.

86. The SC:

1. *Approved* the draft supplement to ISPM No. 5 on *Debarked and bark-free wood* for member consultation (Appendix 9), and *requested* the TPFQ to review the draft text and provide comments and/or recommendations, in particular relating to pest risks associated with bark, to the SC for consideration during its November meeting.

7.9 Establishment of areas of low pest prevalence for fruit flies (Tephritidae)

87. The steward introduced a revised text, which had taken into account comments received on the draft ISPM presented at CPM-2. The draft had been circulated to a small number of experts to check that the points that had been raised were covered. The Chair and SC members congratulated the steward for her extra work in producing the new draft ISPM in the short time since CPM-2.

88. The SC discussed small points of concern in the draft and agreed to several changes which clarified the text. They also agreed to create a separate section on corrective action plans, rather than including it in the section on maintenance of areas of low pest prevalence for fruit flies. The SC agreed to some harmonization of terminology in the standard in relation to hosts, with the use of *primary* and *secondary* throughout the text.

89. The SC discussed whether it was necessary to send the draft for a further round of member consultation, or whether it could be presented directly to CPM-3. The SC decided that a further round of member consultation would minimize discussion on the draft at CPM-3.

90. The SC:

1. *Approved* the draft ISPM on *Establishment of areas of low pest prevalence for fruit flies (Tephritidae)* for member consultation (Appendix 10).

8. FAST-TRACK: PHYTOSANITARY TREATMENTS FOR SC APPROVAL FOR MEMBER CONSULTATION

8.1 Draft irradiation treatments for approval for member consultation under the fast-track process

91. The Secretariat recalled that 14 irradiation treatments were ready to be sent for member consultation through the fast-track process. It was planned that, in order to facilitate consideration by members, the proposed treatments would be sent with a cover letter and a summary report giving information on each treatment.

92. Some members thought that the information in the summary report would not be sufficient to evaluate the treatment, and there was a need for guidance in the covering letter on how additional information could be requested from the Secretariat and an explanation that a "formal objection" as laid out in the fast-track process would be required to stop a treatment, otherwise that treatment will be presented to the CPM for adoption after resolution of comments. If additional information on the scientific background to the treatment and on the TPPT evaluation were required, these would have to be requested to the Secretariat who would liaise with the relevant experts to provide the additional information. The Secretariat noted that if too many comments were received, it would not be in a position to resolve them as provided for in the fast-track process and the SC agreed that the treatments along with their comments would be sent back to the TPPT.

93. The SC noted that these treatments had been developed based on research on certain fruit or vegetable species, and had then been extrapolated to a wider range of fruit and vegetables. There was concern that the evidence showing that this extrapolation was justified should be clearly stated in the treatments. It was finally agreed that treatment descriptions could include details on which fruits and/or vegetables the research had been conducted on. It was noted that no references, either positive or negative, on effects of the treatment on commodity quality were included.

94. Since no information was given on methods to verify the application of the treatment, some members suggested that proper attention be drawn to ISPM No. 18 (*Guidelines for the use of irradiation as a phytosanitary treatment*) by moving the reference to the top of the treatment description in the relevant annex.

95. The SC:

1. *Requested* the Secretariat to make the changes agreed above, and to send the full package to the SC for clearance by e-mail (with a two week deadline) prior to member consultation.

9. DRAFT SPECIFICATIONS FOR APPROVAL

96. The following draft specifications were sent for member consultation in January 2006. However, due to the heavy workload of the SC, the stewards' redrafts of these specifications based on member comments had not been considered by the SC at previous meetings.

9.1 Movement of soil and growing media in association with plants in international trade (high priority)

97. The steward outlined how the specification had been modified to incorporate member comments. The SC further modified the draft, clarifying that the EWG should have expertise in developing phytosanitary measures for import of soil in relation with plants. Several references to PRA were removed from the tasks as it was unclear how they related to the work of the EWG. An additional task of creating a definition for soil was added.

98. The SC discussed the concerns regarding soil as a contaminate and bulk movement of soil but decided for the purposes of this topic to exclude these issues from the specification.

99. The SC:

1. *Approved* the specification (No. 43) as modified and presented in Appendix 11.

9.2 Minimizing regulated pests in common stored products (normal priority)

100. The SC did not have time to review member comments on this draft specification; it will be put on the agenda of the November 2007 meeting. SC members were invited to send their comments to the Secretariat no later than 15 September 2007. The steward will review these comments and revise the draft specification as appropriate.

9.3 Pest risk analysis for plants as quarantine pests (high priority)

101. The steward outlined how the specification had been modified due to the incorporation of country comments. The SC further modified the draft, adding a task to provide appropriate guidance for the further steps in the PRA process for assessment and management. The SC also recommended that the text be drafted as an annex to ISPM No. 11 (*Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms*) and, if necessary, additional supplemental text could be suggested for incorporation into the body of ISPM No. 11.

102. The SC discussed contaminating pests in regards to this topic and decided to focus this topic by excluding contaminating pests from the specification.

103. The SC:

1. *Approved* the specification (No. 44) as modified and presented in Appendix 12.

9.4 Import of plant breeding material (normal priority)

104. The SC did not have time to review member comments on this draft specification; it will be put on the agenda of the November 2007 meeting. SC members were invited to send their comments to the Secretariat no later than 15 September 2007. The steward will review these comments and revise the draft specification as appropriate.

10. DRAFT SPECIFICATIONS FOR APPROVAL FOR MEMBER CONSULTATION

105. The SC, at its meeting in November 2006, had agreed to review and if appropriate approve by e-mail the following two specifications for member consultation. The Secretariat had not been able to facilitate this process and the draft specifications were therefore presented to the SC for approval for member consultation.

10.1 Phytosanitary inspection manual (high priority)

106. The steward outlined how the specification had been developed. The SC was unsure of whether the resulting standard should be in the form of guidelines to NPPOs on how to develop a national inspection manual or if it should be an IPPC inspection manual with specific inspection procedures incorporated for use by inspectors worldwide. Many SC members felt that developing an IPPC inspection manual was an almost impossible task, while other SC members stressed that an IPPC inspection manual would be very useful for many countries, both developing and developed. What countries wanted for the standard was unclear based on the original submission forms.

107. The SC also noted that a new call for topics and priorities for the standard setting work programme would be made in 2007 and additional submissions may also help to clarify what is needed in regards to an inspection manual.

108. The SC:

1. *Requested* the Secretariat to contact the countries which had made submissions on this topic for the standard setting work programme and request clarification on what had been the intent in their submissions.

10.2 Movement of used machinery and equipment (normal priority)

109. The SC did not have time to review this draft specification; it will be put on the agenda of the November 2007 meeting. SC members were invited to send their comments to the Secretariat no later than 15 September 2007. The steward will review these comments and revise the draft specification as appropriate.

11. REGIONAL WORKSHOPS ON DRAFT ISPMs

110. Stewards agreed to develop presentations on the draft ISPM for which they are steward and submit them to the Secretariat no later than 15 June 2007. The Secretariat noted that there was no certainty that all workshops would take place because of lack of funding, but a lead SC member had been allocated to attend each workshop, except for the workshop for French-speaking Africa.

12. PROPOSALS TO IMPROVE THE STANDARD SETTING PROCESS

111. Mr Hedley introduced a revised document on improvements to the standard setting process, and the appendix which illustrated the proposed time schedule for a 3 year adoption process. He reminded the SC that the aim was to improve the quality of standards during the drafting process. He outlined the main current constraints, i.e. the short time scales for consideration of member comments by stewards and the SC-7, and the short time for the Secretariat to prepare documents for consideration by the CPM. The proposal made at the last SC meeting to hold an open-ended meeting one month before the CPM was attractive, provided funding was available, and had been integrated in the paper.

112. In addition, Mr Hedley introduced the idea of only having a CPM meeting every two years. He was aware that much of the Secretariat's time during some parts of the year was taken up with preparation of the annual meeting, which was also very expensive. If meetings were held every two years, as was the case for some other international organizations and treaties, this would release time and funding for other purposes. Although the IPPC mentions annual CPM meetings he felt that there could be mechanisms which would permit this without opening up a revision of the Convention.

113. The SC commented on the document, and in particular the following points were made:

a) there is a need to retain flexibility in the standard setting system, so that the process can be adapted depending on needs for individual draft ISPMs.

b) the SC supported using two stewards for complex standards, one SC member and a specialist in the subject of the draft ISPM, such as a TP member. However, some members saw difficulties with the original proposals that the two stewards should deal with different parts of the standard or with

comments from different regions. Instead the stewards should work together to produce an integrated position on the draft.

c) alternatives to the time schedule proposed were mentioned, such as having two meetings of the SC in November (one week preparing drafts for member consultation and one week reviewing drafts produced by the SC-7 in May). It was however noted by one member that having two weeks of meeting in November was very intensive and might affect the outcome.

d) the SC was favourable to the idea of holding an open-ended working group prior to the CPM in order to resolve issues and reduce the need for evening sessions during CPM. However, it would be difficult to hold such a meeting one month before CPM as proposed in the original paper, due to resources, time and practical constraints for participants (i.e. length of time out of the office). It was suggested that such an open-ended working group would better be held for a few days (e.g. 2 days) in the week prior to CPM. It could also consider the comments sent in advance of the CPM. Some participants noted that with more time available for drafting and considering country comments, there might be fewer issues to be resolved during the CPM. It was noted that SC members might not necessarily be present at that meeting, depending on country designation of their CPM representatives.

e) the SC meeting which reviews member comments on draft ISPMs should devote the majority of its time to this task (e.g. 3-4 days) and less time on administrative matters.

f) if a draft ISPM was substantially modified as the result of consideration of member comments, it should be sent for another round of member consultation.

g) the schedule proposed that the draft ISPMs produced by the SC-7 in May could be available for the SC to comment by e-mail before the November meeting. The SC generally did not favour the inclusion of an e-mail consultation step in the system, and underlined that this should be used only if absolutely necessary due to the volume of e-mails SC members already receive from the IPPC Secretariat, time constraints and their workload.

h) the SC agreed that if the draft ISPM is not of sufficient quality or presents specific problems, it should be returned with appropriate instructions for redrafting. There should be flexibility as to who the draft is returned to, including the drafting group or an individual with expertise. In addition, the SC should establish clear criteria for when a draft ISPM should be returned for further work.

i) regarding addition of topics to the work programme, one member suggested that topics which are known to be interpreted very differently in different parts of the world, and therefore too difficult for international harmonization, should not be added to the work programme.

j) some members considered that it should be necessary to define specific time periods to send drafts for country consultation in the fast-track process.

114. The paper was redrafted incorporating comments from the SC.

115. The SC:

1. *Requested* the SC members who are also part of the Focus Group on the review of the standard setting process to present the revised paper as a discussion paper for the Focus Group to consider at its meeting in July.

13. OTHER BUSINESS

116. The Secretariat explained that discussion papers on pre-clearance, including advice from the FAO legal service on this matter, were ready and would be forwarded to the EWG on this topic, when convened.

14. DATE AND VENUE OF THE NEXT MEETING

117. The SC was informed of the date of the next meetings:

- SC-7: 29 October - 2 November 2007
- SC: 5 - 9 November 2007.

15. ADOPTION OF THE REPORT

118. The SC adopted the report of the meeting.

16. CLOSE

119. The Chair thanked the members of the SC for a productive meeting.

AGENDA

Standards Committee
30 April - 4 May 2007
FAO Headquarters, Rome, Italy

AGENDA ITEM	DOCUMENT
1. Opening of the meeting	--
2. Adoption of the agenda • Documents list • List of SC members and meeting observers • Report of SC November 2006 • Election of rapporteur	2007-SC-May-01 2007-SC-May-02 2007-SC-May-03 2007-SC-May-04 --
3. Items arising from CPM-2 (March 2007)	2007-SC-May-33
4. Standard setting work programme	--
4.1 Standard setting work programme update • Update on explanatory documents	2007-SC-May-25 2007-SC-May-32
4.2 Adjustments to stewards	--
5. Issues regarding technical panels	--
5.1 Review of TP membership	2007-SC-May-42
6. TP reports and executive summaries	--
6.1 TP Diagnostic Protocols • Meeting report (16-20 October 2006) • Executive summary for SC decision	 2007-SC-May-35 2007-SC-May-36
6.2 TP Forest Quarantine • Meeting report (12-16 June 2006) • Executive summary for SC decision	 2007-SC-May-14 2007-SC-May-39
6.3 TP Fruit Flies • Meeting report (4-8 September 2006) • Executive summary for SC decision	 2007-SC-May-15 2007-SC-May-40
6.4 TP Phytosanitary Treatments • Meeting report (4-8 December 2006) • Executive summary for SC decision	 2007-SC-May-37 2007-SC-May-38
6.5 TP Glossary • Meeting report (9-13 October 2006) • Executive summary for SC decision • Terminology of the CBD • Use of the term *regulated pests*	 2007-SC-May-16 2007-SC-May-34 2007-SC-May-19 2007-SC-May-20
7. Draft ISPMs for review in preparation for member consultation and associated TP/EWG reports	--
7.1 Amendments to the *Glossary of phytosanitary terms* – TPG High priority (Steward: John Hedley) • TPG report	 2007-SC-May-05 2007-SC-May-16
7.2 Appropriate level of protection (supplement to ISPM No. 11) – High priority (Steward: Fuxiang Wang) • EWG report	 2007-SC-May-06 2007-SC-May-43
7.3 Not widely distributed (supplement to ISPM No. 5) – High priority (Steward: Julie Aliaga) • EWG report	 2007-SC-May-07 2007-SC-May-17
7.4 Developing a strategy to reduce or replace the use of methyl bromide – High priority (Steward: Ringolds Arnitis) • EWG report	 2007-SC-May-10 2007-SC-May-44
7.5 Sampling of consignments – High priority (2nd submission to SC) (Steward: David Porritt) • EWG report • Comments received and steward responses	 2007-SC-May-11 2007-SC-May-29 2007-SC-May-30

AGENDA ITEM	DOCUMENT
7.6 Systems approaches for the pest risk management of fruit flies – Normal priority (Steward: Mike Holtzhausen) • TPFF report	2007-SC-May-08 2007-SC-May-15
7.7 Classification of commodities – High priority (2nd submission to SC) (Steward: Diego Quiroga) • EWG report	2007-SC-May-09 2007-SC-May-18
7.8 Debarked and bark-free wood (supplement to ISPM No. 5) – High priority (Steward: Ringolds Arnitis) • Comments submitted to CPM-2	2007-SC-May-12 Rev1 2007-SC-May-13
7.9 Establishment of areas of low pest prevalence for fruit flies – Normal priority (Steward: Magda Gonzalez) • Comments submitted to CPM-2 and steward (with responses)	2007-SC-May-27 2007-SC-May-28
Draft ISPMs deferred to May 2008: • Export certification for potato minitubers and micropropagative material – High priority (Steward: Greg Wolff) • Post-entry quarantine facilities – Normal priority (Steward: Mazlan Saadon)	--
8. Fast-track: Phytosanitary treatments for SC approval for member consultation	--
8.1 Draft irradiation treatments for approval for member consultation under the fast-track process	--
9. Draft specifications for review of member comments and approval by SC	--
9.1 Movement of soil and growing media in association with plants – Normal priority (Steward: Mohammad Katbeh Bader)	2007-SC-May-21
9.2 Minimizing regulated pests in common stored products – Normal priority (Steward: Robert Karyeija)	2007-SC-May-22
9.3 Pest risk analysis for plants as quarantine pests – High priority (Steward: David Porritt)	2007-SC-May-23
9.4 Import of plant breeding material – Normal priority (Steward: Mike Holtzhausen)	2007-SC-May-24
10. Draft specifications for review and approval for member consultation	--
10.1 Phytosanitary inspection manual – High priority (Steward: Julie Aliaga)	2007-SC-May-31
10.2 Movement of used machinery and equipment – Normal priority (Steward: Gabriel Adejare)	2007-SC-May-41
11. Review of standard setting calendar	2007-SC-May-26
12. Regional workshops on draft ISPMs • Assignment of SC representatives • Deadlines for presentations by stewards on draft ISPMs	--
13. Proposal to improve the standard setting process	2007-SC-May-45
14. Other business • Discussion papers for the EWG on pre-clearance (Steward: Mike Holtzhausen)	2007-SC-May-46 2007-SC-May-47
15. Date and venue of the next SC meeting	--
16. Adoption of the report	--
17. Close	--

STEWARDS

Stewards for topics on the IPPC standard setting work programme

Steward	Spec No.	Title of Specification
Adejare, Gabriel (Nigeria)	*(draft)*	Movement of used machinery and equipment
Aliaga, Julie (USA)	*(draft)*	Inspection manual
Aliaga, Julie (USA)	33	Supplement to ISPM No. 5: Guidelines for the interpretation and application of the phrase not widely distributed in relation to quarantine pests
Arnitis, Ringolds (Latvia)	17 Rev1	Debarking of wood
Bast-Tjeerde, Reinouw (Canada)	37	Use of the term country of origin in existing ISPMs
Enkerlin, Walther (IAEA)	35	Trapping procedures for fruit flies (Tephritidae)
Gonzalez, Magda (Costa Rica)	28	Areas of low pest prevalence for fruit flies
Gonzalez, Magda (Costa Rica)	41	Establishment of pest free places of production and pest free production sites for fruit flies (Tephritidae)
Hedley, John (New Zealand)	08 Rev1	Efficacy of measures: concept and application
Hedley, John (New Zealand)	32	Review of ISPMs
Holtzhausen, Mike (South Africa)	*19 (draft)*	Import of plant breeding material
Holtzhausen, Mike (South Africa)	23	Guidelines for surveillance for specific pests: *Xanthomonas axonopodis* pv. *citri* (citrus canker)
Holtzhausen, Mike (South Africa)	29	The use of integrated measures in a systems approach for pest risk management of fruit flies
Holtzhausen, Mike (South Africa)	42	Pre- clearance for regulated articles
Karyeija, Robert (Uganda)	*(draft)*	Regulating stored products in international trade
Katbeh Bader, Mohammad (Jordan)	43	Movement of soil and growing media in association with plants in international trade
Katbeh Bader, Mohammad (Jordan); Assistant: Côté, Steve (Canada)	16	Alternatives to methyl bromide
Melcho, Beatriz (Uruguay)	24	Post-entry quarantine facilities
Opatowski, David (Israel)	34	Pest risk management for plants for planting in international trade
Porritt, David (Australia)	20	Sampling of consignments
Porritt, David (Australia)	40	Development of Annex 1 (Specific Approved Treatments) of ISPM No. 18
Porritt, David (Australia)	44	Pest risk analysis for plants as quarantine pests
Quiroga, Diego (Argentina)	18	Classification of commodities into phytosanitary risk categories
Ribeiro e Silva, Odilson (Brazil)	*(draft)*	Determination of host susceptibility for fruit flies (Tephritidae)
Ribeiro e Silva, Odilson (Brazil)	15 Rev1	The use of integrated measures in a systems approach for pest risk management of citrus fruit for citrus canker (*Xanthomonas axonopodis* pv. *citri*)
Ribeiro e Silva, Odilson (Brazil)	39	Suppression and eradication procedures for fruit flies (Tephritidae)
Sakamura, Motoi (Japan)	38	Revision of ISPMs No. 7 and 12

Steward	Spec No.	Title of Specification
Wang, Fuxiang (China)	36	Appropriate level of protection
Wolff, Greg (Canada)	*(draft)*	Forest surveillance
Wolff, Greg (Canada)	*(draft)*	International movement of forest tree seeds
Wolff, Greg (Canada)	*(draft)*	International movement of wood
Wolff, Greg (Canada)	21	Guidelines for regulating potato micropropagation material and minitubers in international trade
Wolff, Greg (Canada)	31	Revision of ISPM No. 15 (Guidelines for regulating wood packaging material in international trade)

Stewards for technical panels

Steward	Spec No.	Name of technical panel
Jens Unger (Germany)	TP1 Rev2	Technical panel to develop diagnostic protocols for specific pests
Odilson Ribeiro e Silva (Brazil)	TP2 Rev2	Technical panel on pest free areas and systems approaches for fruit flies
David Porritt (Australia)	TP3 Rev1	Technical panel on phytosanitary treatments
Greg Wolff (Canada)	TP4 Rev1	Technical panel on forest quarantine
John Hedley (New Zealand)	TP5	Technical panel on the *Glossary of phytosanitary terms*

SPECIFICATION FOR TECHNICAL PANELS NO. 2 (2ND REVISION)

Title: Technical Panel on pest free areas and systems approaches for fruit flies.

Reason for the Technical Panel: ICPM-6 identified the need for the formation of a Technical Panel on pest free areas and systems approaches for fruit flies.

Scope and purpose: A panel of fruit fly experts will review scientific and technical data in order to establish the technical requirements for the recognition of fruit flies pest free areas and systems approaches.

Tasks: The technical panel should:

1. Identify the most important fruit fly pest species for priority work.
2. Identify case studies that could act as good examples for establishment of pest free areas and systems approaches for fruit flies.
3. Develop standardized procedures by fruit fly species to establish fruit flies pest free areas, fruit flies areas of low pest prevalence and systems approaches, including collection of adequate information, surveys, detection and identification techniques, emergency measures to protect free areas and maintain systems approaches, evaluation, approval, and suspension procedures for fruit flies pest free areas.
4. Develop a process, identify criteria needed, set up a protocol and define an evaluation method for the submission of research information.
5. Establish the technical requirements for the recognition of fruit flies pest free areas, fruit flies areas of low pest prevalence and systems approaches, taking into account adequate biological and climatic parameters, applicability and recognition requirements.
6. Develop a procedure to consult with international specialists to exchange information about fruit flies.
7. Identify measures to be integrated in systems approaches for different species of fruit flies.
8. Analyse the feasibility of the measures recommended and evaluate the cost/benefit of the measures, their technical justification and their relationship with the identified risk.
9. Consider the relationship between the draft documents proposed and currently approved ISPMs relevant for this subject.
10. Determine measures to be integrated in systems approaches for different species of fruit flies, considering the feasibility of the measures recommended and selecting the least trade restrictive.
11. Submit draft standards to the SC including, where appropriate, for fast-track approval.

Provision of resources: Funding for meetings is provided by the IPPC Secretariat (FAO). As recommended by ICPM-2 (1999), whenever possible, those participating in standard setting activities voluntarily fund their travel and subsistence to attend meetings. Participants may request financial assistance, with the understanding that resources are limited and the priority for financial assistance is given to developing country participants.

Steward: Odilson Ribeiro e Silva (Brazil).

Expertise: 5-7 international phytosanitary experts that have interest and expertise in relevant aspects of quarantine, control and risk management of fruit flies, and a suitably qualified expert from the International Atomic Energy Agency (IAEA).

Participants: Technical panel membership can be found on the International Phytosanitary Portal (IPP, https://www.ippc.int).

Approval: Introduced into the work programme by the ICPM at its Sixth Session in 2004. Specification approved by the SC in April 2004. First revision approved by the SC in November 2004. Second revision approved by the SC in May 2007.

References: Relevant ISPMs; regional standards; national programs on fruit fly pest free areas and systems approaches; IAEA documentation.

Discussion papers: Participants and interested parties are encouraged to submit discussion papers to the IPPC Secretariat (ippc@fao.org) for consideration by the technical panel.

SPECIFICATION FOR TECHNICAL PANELS NO. 1 (2ND REVISION)

Title: Technical Panel to develop diagnostic protocols for specific pests.

Reason for the Technical Panel: ICPM-6 identified the need for diagnostic protocols (DP) for specific pests to be recommended to the Standards Committee. To do this, a Technical Panel on diagnostics was proposed.

Scope and purpose: The Technical Panel will produce DPs for specific pests utilizing the format for DPs established by the Expert Working Group.

Tasks: The technical panel should:

1. Identify priorities for specific DPs to be developed and submitted to the SC. Aspects to consider include:
   - availability of existing regional standards and/or DPs used by individual countries
   - suggestions for new DPs (i.e. those put forward by NPPOs, RPPOs, EWGs or other Technical Panels).
2. Identify specialists.
3. Produce or supervise the production of DPs for specific pests as future annexes to ISPM No. 27 (*Diagnostic protocols for regulated pests)*.
4. Submit to the SC draft DPs for specific pests and where necessary revision of previously adopted DPs.
5. Under the direction of the SC, consider other topics related to diagnosis of regulated pests (ISPM No. 27).

Provision of resources: Funding for meetings is provided by the IPPC Secretariat (FAO). As recommended by ICPM-2 (1999), whenever possible, those participating in standard setting activities voluntarily fund their travel and subsistence to attend meetings. Participants may request financial assistance, with the understanding that resources are limited and the priority for financial assistance is given to developing country participants.

Steward: Jens Unger (Germany).

Expertise: At least 5-7 participants comprised primarily of diagnostic (where appropriate taxonomic) experts with at least one representing each discipline: entomology, acarology, nematology, mycology, plant bacteriology, virology (including viroids and phytoplasma) and botany. Between them participants should have practical expertise in the use of morphological and molecular/biochemical diagnostic techniques, and in phytosanitary procedures.

Participants: Technical panel membership can be found on the International Phytosanitary Portal (IPP, https://www.ippc.int).

Approval: Introduced into the work programme by the ICPM at its Sixth Session in 2004. Specification approved by the SC in April 2004. First revision approved by the SC in November 2004. Second revision approved by the SC in May 2007.

References: Regional standards; NPPO DPs; diagnostic manuals; EPPO DPs; ISTA; other relevant information.

Discussion papers: Participants and interested parties are encouraged to submit discussion papers to the IPPC Secretariat (ippc@fao.org) for consideration by the technical panel.

For member consultation
June 2007

AMENDMENTS TO ISPM No. 5 (*GLOSSARY OF PHYTOSANITARY TERMS*)

Members are asked to consider the following proposals made by the Standards Committee following recommendations by the Technical Panel for the Glossary (TPG) in relation to additions, revisions and deletions in ISPM No. 5 (*Glossary of phytosanitary terms*). A brief explanation is given for each proposal. For revised terms and definitions, explanations of the changes made to the last approved definition are also given. It is suggested that comments should relate to these changes.

1. NEW TERMS AND DEFINITIONS

1.1 Prevalence

Background

The term was a proposed addition to the Glossary and was sent out for country consultation in 2004. This term/definition was not approved by the SC in November 2004 on the basis that a definition of *low pest prevalence* had been proposed in the draft standard on areas of low pest prevalence (ALPP) (now ISPM No. 22). The definition for *low pest prevalence* was not maintained in ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*). The definition of *prevalence* was revised by the Glossary working group (GWG) and proposed to the SC in May 2006, as part of the proposed amendments to the Glossary. The SC sent it to the TPG for further review, with queries on the use of the word population in the definition, and whether it applied to field situations, or also to stored product pests or stored product situations. The definition proposed below was developed by the TPG in October 2006 and revised by the SC in May 2007.

The following points may be considered when reviewing the definition below:
- the proposed definition covers three different types of prevalence, always at a given time: number of production units in which the pest is present related to the total area surveyed; number of plants affected by pest; level of occurrence of a pest in an area (independently from plants or units).
- however, the concept of "low pest prevalence" in ALPP is a low level of population or a level of pest below a threshold level, without a time component. For that reason, this concept does not fit in the definition of "prevalence".
- *population* is used in its statistical sense. It is specified in the definition that it applies to a population of *plants, plant products or other articles*
- the wording *defined index or range of values* leaves wide possibilities as to how the occurrence may be expressed (e.g. quantitative, or qualitative such as "high", “medium” "low").

Proposed definition

prevalence (of a pest)	Proportion of units in a population of **plants**, **plant products** or other articles that is affected by a **pest** at a given time, or the level of **occurrence** of a pest in an area at a given time as expressed by a defined index or a range of values.

1.2 Tolerance

Background

This term/definition was sent out for country consultation in 2004, as part of the draft ISPM on inspection (now ISPM No. 23). The proposed definition for tolerance had attracted many comments at country consultation. The SC noted that the term would also be considered in the context of the draft on sampling, and would be discussed once the EWG on sampling had met. The definition proposed to the SC in May 2006 was sent back to the TPG for further consideration. The definition below was proposed by the TPG in October 2006 and revised by the SC in May 2007.

The following points may be considered when reviewing the definition below:
- the term *tolerance* is used in various contexts, and the definition below applies to pests only. The term has a very wide application and its definition should be kept broad so as not to restrict its meaning and use. The term *tolerance level* was proposed.
- in order to keep the definition wide and not limit usage of the term, the definition uses pest (and not *regulated pest*) and action (and not *phytosanitary action*, which would limit it to regulated pests).
- the definition creates a link between tolerance and prevalence (see proposed definition above).

Proposed definition

tolerance level	**Prevalence** of a **pest** that is a threshold for action to control that **pest** or to prevent its **spread** or **introduction**

2. REVISED TERMS AND DEFINITIONS

2.1 Beneficial organisms

Background

Discussions of the revision of the definition of biological control (following CPM-1) led to the proposal that the definition for biological control should be deleted from the Glossary (adopted at CPM-2) and that the definition of beneficial organisms should be revised to cover sterile insects.

Proposed definition:

beneficial organism	Any **organism** directly or indirectly advantageous to **plants** or **plant products**, including **biological control agents** and **sterile insects**

3. PROPOSED DELETIONS

ICPM-7 adopted the revised ISPM No. 3 (2005). A number of terms in the Glossary were defined when ISPM No. 3 (1996) was originally developed. It is proposed that the following terms and their definitions should be deleted. Reasons for the deletion are given for each term.

term	reason for deletion
authority	ISPM No. 3 (2005) uses the words "NPPO or responsible authority". The existing definition of authority does not apply to that use, and also mentions the "code" which was ISPM No. 3 (1996). The term does not have a meaning which is specific to the IPPC and a definition is not needed.
biological pesticide (biopesticide)	The current definition is out of date, for example it does not cover plant extracts. The term is used in ISPM No. 3 (2005) and in ISPM No. 9 but does not have a meaning which is specific for the IPPC, and a definition is not needed.
- classical biological control, **- introduction (of a biological control agent),** **- establishment (of a biological control agent)**	The three definitions were linked to ISPM No. 3 (1996). There is no need for specific definitions in relation to any ISPM.
exotic	The definition was linked to ISPM No. 3 (1996) and refers to the Code. The term is not used in ISPM No. 3 (2005). It is now used only in ISPM No. 9. It is recommended that the equivalent term *non indigenous* be used in standards if needed instead of exotic, for the following reasons: - the definition uses the term *ecoarea*, which has already been deleted from the glossary. - this term causes confusion in Spanish and French since *alien* and *exotic* are translated by the same word (*exotico* in Spanish and *exotique* in French). [The SC (May 2007) also recommended that suitable wording be included in the document being prepared on CBD terminology to specify that exotic and non-indigenous could be considered as synonyms.]
Import Permit (of a biological control agent)	*Import Permit* is defined in the glossary and its definition covers the case of import permit for biological control agents.
micro-organism	This is a common term which does not have a meaning which is specific for the IPPC
specificity	The definition was linked to ISPM No. 3. This term is self-explanatory and the current definition might cause confusion

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INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES

DEVELOPING A STRATEGY TO REDUCE OR REPLACE THE USE OF METHYL BROMIDE FOR PHYTOSANITARY PURPOSES

(200-)

CONTENTS

INTRODUCTION

SCOPE

This standard provides guidance to National Plant Protection Organizations (NPPOs) and Regional Plant Protection Organizations (RPPOs) in the development of a strategy to reduce or replace the use of methyl bromide as a phytosanitary measure, in order to reduce emissions of methyl bromide.

REFERENCES

Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer [from the Fourth Meeting of the Parties to the Montreal Protocol, Copenhagen, 1992].
Guidelines for a phytosanitary import regulatory system, 2004. ISPM No. 20, FAO, Rome.
Guidelines for inspection, 2005. ISPM No. 23, FAO, Rome.
Guidelines for the determination and recognition of equivalence of phytosanitary measures, 2005. ISPM No. 24, FAO, Rome.
Montreal Protocol on Substances that Deplete the Ozone Layer, 2000. UNEP Ozone Secretariat, United Nations Environment Programme. ISBN: 92-807-1888-6. http://www.unep.org/ozone/pdfs/Montreal-Protocol2000.pdf
Requirements for the establishment of areas of low pest prevalence, 2005. ISPM No. 22, FAO, Rome.

Requirements for the establishment of pest free areas, 1996. ISPM No. 4, FAO, Rome.

Requirements for the establishment of pest free places of production and pest free production sites, 1999. ISPM No. 10, FAO, Rome.
The use of integrated measures in a systems approach for pest risk management, 2002. ISPM No. 14, FAO, Rome.

DEFINITIONS

Definitions of phytosanitary terms used in the present standard can be found in ISPM No. 5 (*Glossary of phytosanitary terms*).

ABBREVIATIONS USED IN THIS STANDARD

MBTOC	Methyl Bromide Technical Options Committee [of UNEP]
QPS	quarantine and pre-shipment
UNEP	United Nations Environment Programme

OUTLINE OF REQUIREMENTS

This standard outlines areas for action and guidelines for developing and implementing a national strategy on the use of methyl bromide as a phytosanitary measure. With the overall aim of reducing release of methyl bromide into the atmosphere, NPPOs and in some instances RPPOs may consider methods of reducing the quantities of methyl bromide used, reducing methyl bromide emissions by physical means, and promotion and implementation of treatments and procedures that provide alternatives to the use of methyl bromide.

BACKGROUND

The main purpose of the International Plant Protection Convention (IPPC) is to protect plants. In doing so, contracting parties undertake the promotion of appropriate measures for the control of pests. In its Preamble, the IPPC states that contracting parties take into account internationally approved principles governing the protection of human health and the environment". Contracting parties to the IPPC are usually also parties of the Montreal Protocol on Substances that Deplete the Ozone Layer, an agreement that aims to protect the ozone layer by reducing, and ultimately eliminating, emissions of ozone-depleting substances through a phase-out of production and import of such substances. Thus, while pursuing the IPPC's goal, contracting parties are advised to take into account also environmental concerns, among which is protection of the ozone layer by reducing methyl bromide emissions.

Methyl bromide has been widely used as a phytosanitary treatment for many decades. It offers a broad spectrum of control of insects, nematodes, weeds, pathogens and rodents. Methyl bromide has been employed primarily as a soil fumigant before planting crops, and is also used for commodity treatment and structural fumigation. Most uses of methyl bromide for quarantine and pre-shipment (QPS) purposes are for the treatment of durable commodities, such as grains, cereals and dried foodstuffs, wood packaging materials, wood and logs, but perishable commodities, such as fruit, are also relevant.

In the 1992 Copenhagen Amendment to the Montreal Protocol, methyl bromide was listed as an ozone-depleting substance subject to phase-out provisions of the Montreal Protocol. However, the use of methyl bromide for QPS purposes is currently exempt from the protocol's phase-out provisions because of difficulties in identifying technologically and economically feasible alternatives. There is currently no limit or cap on the amount of methyl bromide that can be used for these QPS purposes.

It is recognised that alternatives to methyl bromide for phytosanitary purposes are needed, particularly because there may be future restrictions on the use of methyl bromide. It is also recognised that there is a need for contracting parties to retain methyl bromide for quarantine treatments until suitable alternative phytosanitary treatments or procedures are available.

Some countries, because of their particular situation, may have already successfully reduced or eliminated the use of methyl bromide.

To be considered viable, phytosanitary measures that are alternatives to methyl bromide and that are equivalent to methyl bromide fumigation as per ISPM No. 24 (*Guidelines for the determination and recognition of equivalence of phytosanitary measures*) should also be economically and technically feasible. In comparison, the United Nations Environment Programme's Methyl Bromide Technical Options Committee (MBTOC) defined alternatives as those non-chemical or chemical treatments and/or procedures that are technically feasible for controlling pests, thus avoiding or replacing the use of methyl bromide.

REQUIREMENTS

Because of the high risk of introduction of some regulated pests, the need for methyl bromide in quarantine applications remains until a range of equivalent alternatives has been developed. However, NPPOs and in some instances RPPOs are encouraged to put in place a national or regional strategy that will help them reduce the use of methyl bromide for phytosanitary purposes and/or reduce emissions of methyl bromide. The strategy may include the following areas for action in regards to methyl bromide use for phytosanitary purposes:

- replacing methyl bromide use
- reducing methyl bromide use
- physically reducing methyl bromide emissions
- accurately recording methyl bromide use for phytosanitary purposes.

The first three areas are interlinked but have the overall purpose of reducing release of methyl bromide into the atmosphere.

The following considerations will assist in the development of a national strategy to reduce the use of methyl bromide for phytosanitary purposes, and to foster the implementation of alternative treatments and procedures.

1. Replacement of Methyl Bromide Use for Phytosanitary Purposes

In recognition of the desire to minimize the incidence of use of methyl bromide, contracting parties should, where possible, take actions to increase the use of alternative phytosanitary measures. Where methyl bromide fumigation is a currently used as a phytosanitary treatment it may be replaced by an alternative phytosanitary measure in which no methyl bromide is used. This may involve the use of ISPMs on the following concepts: systems approaches, pest free areas (PFAs), areas of low pest prevalence (ALPPs), pest free places of production, pest free production sites, and equivalence.

Contracting parties will be encouraged to develop systems approaches or PFAs and ALPPs that help to provide alternatives to methyl bromide use, e.g. ALPPs for fruit flies, PFAs for a forest pest (such as Asian longhorn beetle and pine wood nematode).

The following phytosanitary measures may be implemented independently or in conjunction with other phytosanitary measures to replace methyl bromide as a phytosanitary treatment:

- use of chemicals such as treatments mentioned in Appendix 1
- application of physical treatments (e.g. heating, cooling, irradiation)
- application of biological methods (e.g. biological control agents)
- immediate commodity processing (e.g. grain being milled into flour on arrival)
- pest free methods of production (e.g. soil-free growing media, tissue culture, sterile culture).

Appendix 1 contains a list of items that have historically been treated with methyl bromide and presents possible alternative phytosanitary treatments that could be used and that would reduce methyl bromide emissions and/or replace methyl bromide use.

2. Reducing Methyl Bromide Use for Phytosanitary Purposes

The reduction of methyl bromide emissions can be achieved through the continued use of methyl bromide as a phytosanitary treatment but at a reduced dosage or decreased treatment frequency.

The following measures may be implemented to reduce use of methyl bromide as a phytosanitary treatment:

- inspection-based fumigation instead of mandatory fumigation, e.g. to detect and identify the quarantine pest of concern, where appropriate

- avoidance of unnecessary refumigation with methyl bromide
- improvement of treatment facilities in order to increase exposure time with a reduction of dosage.

3. Physically Reducing Methyl Bromide Emissions

Contracting parties should aim to minimize or eliminate the release of methyl bromide to the atmosphere by physical means. This may be achieved by:

- methyl bromide emissions control, e.g. recapture, and/or reusage or destruction, through the use of leak-proof chambers and capture bubbles, etc.
- improvement of fumigation performance, e.g. reduce leakage, better monitoring.

4. Recording Methyl Bromide Use for Phytosanitary Purposes

To measure progress in reduction of methyl bromide emissions from phytosanitary usage, countries need to accurately record and collate data on current usage and share this data with their country's National Ozone Unit.

The information on methyl bromide use for phytosanitary purposes is required as an annual summary of:

- quantities of methyl bromide used in kilograms
- description of the items[1] fumigated
- whether the use was on import or export goods
- target pest.

5. Guidelines for Developing and Implementing a Strategy on Methyl Bromide Use for Phytosanitary Measures

NPPOs (and in some instances RPPOs) could be involved in the coordination of the following efforts:

1. Review and change phytosanitary policies (especially import regulations) to reduce and/or replace methyl bromide where it is required and an alternative exists.
2. Ensure that methyl bromide is used only for quarantine pests and that it is authorized or performed by the NPPO as an official treatment, including emergency action fumigation.
3. Provide guidance to those conducting methyl bromide fumigations for quarantine purposes on the necessity for alternative phytosanitary measures.
4. Inform other relevant national agencies and interest groups of the reasons for essential phytosanitary use of methyl bromide.
5. Develop and choose phytosanitary treatments that are alternatives to methyl bromide.
6. Communicate to other NPPOs where there are alternatives to methyl bromide use.
7. Submit phytosanitary treatments that are scientific and approved alternatives to methyl bromide to the IPPC Secretariat using the guidelines in ISPM No. 28 (*Phytosanitary treatments for regulated pests)*.
8. Prioritize the development of alternative treatments to those commodities where methyl bromide usage is high.
9. Liaise with research groups and funding bodies to develop alternative treatments as appropriate.
10. Facilitate the annual collection of methyl bromide usage data as outlined in section 1 of this ISPM.
11. Post or link to current alternatives for methyl bromide treatment information on the International Phytosanitary Portal (IPP, https://www.ippc.int).
12. Coordinate with the National Ozone Unit to implement a national strategy to reduce and replace methyl bromide usage.
13. Exchange information on alternatives to methyl bromide usage between the NPPO and the National Ozone Unit.
14. Identify current treatments where methyl bromide is the only option, and provide the necessary information to the IPPC Secretariat for consideration in the development of potential alternatives.

[1]The first column of the table in Appendix 1 provides a list of items.

APPENDIX 1

PHYTOSANITARY TREATMENTS TO REDUCE OR REPLACE METHYL BROMIDE

Listed in the table below are those treatments which could be considered and validated as alternatives to methyl bromide and which are currently registered in at least one country. The measures are also practised in at least one country. These treatments may be used to reduce and/or replace methyl bromide use in certain circumstances.

The following considerations affect choice of a measure:

1. Crop type and/or species (flowers, fruits, foliage, etc.) and pest species (insects, bacteria, fungi, virus, etc.) combinations will influence choice of treatments.
2. Lack of a registration or equivalency agreement between countries may preclude use of the method in particular countries.
3. Economic factors may preclude use of the method in particular countries.
4. Processes in the supply chain may reduce pests to an acceptable level e.g. washing, freezing, dicing.
5. The occurrence of resistance of a pest towards the envisaged alternative may change the necessary dosage schedule or preclude the alternative.
6. Irradiation is often used only on specific life stages for sterility not eradication.

Description of items fumigated	**Phytosanitary treatments to consider to reduce or replace methyl bromide**
Commodities	
Bulbs, corms, tubers and rhizomes (intended for planting)	Pre-plant quarantine soil sterilisation (steam or chemical), hot water, insecticide or nematicide dip, or a combination of these treatments
Cut flowers and branches (including foliage)	Pyrethroids + CO_2, phosphine, phosphine + CO_2, hot water, controlled atmosphere + combination treatment, irradiation
Fresh fruit and vegetables	Cold treatment, quick freeze, high temperature forced air, combination of treatments, vapour heat, hot water, irradiation, phosphine, hydrogen cyanide, chemical dip (e.g. dimethoate)
Grain, cereals and oil seeds for consumption including rice (not intended for planting)	Phosphine, phosphine + CO_2, controlled atmosphere (CO_2, N_2), heat, irradiation, ethyl formate, carbonyl sulphide
Dried foodstuffs (including herbs, dried fruit, coffee, cocoa)	Phosphine, irradiation, heat, phosphine + carbon dioxide, controlled atmosphere, sulfuryl fluoride, carbon dioxide under high pressure, propylene oxide, ethylene oxide, ethyl formate
Nursery stock (plants intended for planting other than seed)	Phosphine, soil sterilisation (steam or chemical e.g. methyl isothiocyanate (MITC) fumigants), hot water, insecticide or nematicide dip, combination of any of these treatments
Seeds (intended for planting)	Phosphine, hot water, combination treatment, insecticide + fungicide dip or dusting
Wood packaging materials, other packaging materials including cardboard, pallets and dunnage	Heat treatment, irradiation, sulfuryl fluoride, phosphine, MITC fumigants + sulfuryl fluoride

Description of items fumigated	**Phytosanitary treatments to consider to reduce or replace methyl bromide**
Wood (including round wood, sawn wood, wood chips)	Heat, irradiation, sulfuryl fluoride, phosphine, MITC fumigants + sulfuryl fluoride, carbonyl sulphide
Whole logs (with or without bark)	Sulfuryl fluoride, phosphine, heat, irradiation
Hay, straw, dried animal fodder (other than grains and cereals listed above)	Heat, irradiation, sulfuryl fluoride, phosphine, compression + phosphine
Cotton and other fibre crops and products	Heat, irradiation, sulfuryl fluoride, phosphine
Tree nuts (almonds, walnuts, hazelnuts etc.)	Phosphine, irradiation, heat, phosphine + carbon dioxide, controlled atmosphere, sulfuryl fluoride, carbon dioxide under high pressure, propylene oxide, ethylene oxide, ethyl formate
Structures and equipment	
Buildings with quarantine pests (including elevators, dwellings, factories, storage facilities)	Heat, sulfuryl fluoride, phosphine, carbon dioxide, insecticide spray or fogging, rodenticide
Equipment (including used agricultural machinery and vehicles) and empty shipping containers	Heat, sulfuryl fluoride, phosphine, insecticide spray or fogging, controlled atmosphere
Other items	
Personal effects, furniture, crafts, artefacts, hides, fur and skins	Sulfuryl fluoride, phosphine, insecticide spray or fogging, controlled atmosphere, ethylene oxide, irradiation, or heat (*if applicable*)

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INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES

SAMPLING OF CONSIGNMENTS

(200-)

CONTENTS

INTRODUCTION

SCOPE

This standard provides guidance to National Plant Protection Organizations (NPPOs) in developing sampling design and determining sampling frequency that may be used as part of the processes used for inspection or for gathering material for testing to ensure compliance with phytosanitary requirements.

Sampling of plants, plant products and other regulated articles for import or export may occur at the time a consignment is being assembled or after it has been assembled.

REFERENCES

Cochran, W.G. 1977. *Sampling techniques*. 3rd edn. New York, John Wiley & Sons. 428 p.
Glossary of phytosanitary terms, 2007. ISPM No. 5, FAO, Rome.
Guidelines for inspection, 2005. ISPM No. 23, FAO, Rome.
Pest risk analysis for regulated non-quarantine pests, 2004. ISPM No. 21, FAO, Rome.

DEFINITIONS

Definitions of phytosanitary terms used in the present standard can be found in ISPM No. 5 (*Glossary of phytosanitary terms*).

OUTLINE OF REQUIREMENTS

This standard provides guidance on sampling design. The objectives of sampling are described. The standard describes the parameters of sampling (acceptance number, level of detection, confidence level, efficacy of detection and sample size) and the tolerance level. The links between the parameters and the relationship between the parameters and the tolerance level are given. Several sampling methods are described and guidance is given on selection of the most appropriate sampling method, as well as on how to determine sample size.

BACKGROUND

Inspection of consignments of plants and plant products moving into trade (import, export and in transit) is an essential tool for the management of pest risks and is the most frequently used phytosanitary procedure worldwide to evaluate the phytosanitary status of a consignment.

It is often not feasible to inspect entire consignments, so phytosanitary inspection is performed mainly on samples obtained from a consignment. It is noted that the sampling concepts presented in the document may apply to evaluation methods other than inspection, notably selection of units for testing.

It is important that sampling procedures established and used by NPPOs are documented and transparent, particularly because inspection based on sampling may lead to refusal to issue a phytosanitary certificate, refusal of entry, or treatment or destruction of a consignment or part of a consignment.

Sampling methodologies used by NPPOs will depend on the sampling objectives (for example, sampling for testing) and may be solely statistically based or developed noting particular operational constraints. Procedures developed in accordance with operational constraints may not yield the same statistical confidence levels in the results as fully statistically based procedures, but such procedures may still give valid results depending on the desired sampling objective.

OBJECTIVES OF SAMPLING OF CONSIGNMENTS

Sampling consignments may be done for a variety of purposes, including:

- to detect regulated pests
- to provide assurance that the number of pests or infested units in a consignment does not exceed a specified level
- to provide assurance of the general phytosanitary condition of a consignment, in particular the detection of organisms for which a phytosanitary risk has not yet been determined
- to optimize the probability of detecting specific pests given the available resources
- to gather information (auditing or determining the proportion of the consignment infested)
- assurance of compliance with phytosanitary requirements
- to select units for testing.

It should be noted that inspection based on sampling always involves a degree of error. The acceptance of some degree of risk that the pests are present is inherent in the use of sampling procedures for inspection. Inspection using statistically based sampling methods can provide confidence that the incidence of a pest is below a certain level, but it can never prove that a pest is truly absent from a consignment.

REQUIREMENTS

1. Concept

Sampling is designed to detect a certain percentage or proportion of infestation with a specific confidence level, and thus requires the NPPO to determine the following interrelated parameters: acceptance number, level of detection, confidence level, efficacy of detection and sample size. A statistically based sampling method is implied. The NPPO also establishes a tolerance level.

1.1 Acceptance number

The acceptance number is the number of infested units or the number of individual pests that are permissible in a sample of a given size before phytosanitary action is taken. Many NPPOs would determine this number to be zero for quarantine pests.

1.2 Level of detection

The level of detection is the minimum percentage or proportion of infestation that the NPPO intends to detect in a consignment.

The level of detection may be specified for a pest, a group or category of pests, or for unspecified pests. The level of detection may be derived from:

- a decision based on pest risk analysis to detect a specified infestation (the infestation determined to present an unacceptable risk)
- an evaluation of the effectiveness of phytosanitary risk management components applied before inspection
- an operationally based decision that inspection above a certain level is not practical.

1.3 Confidence level

The confidence level indicates the assurance (in statistical terms, the probability) that a consignment with a degree of infestation exceeding the level of detection will be detected. A confidence level of 95% is commonly used. The NPPO may choose to require different confidence levels depending on the end use of the commodity (e.g. a higher confidence level may be required for commodities for planting than for commodities for consumption). Very high values quickly become difficult to achieve, and lower values become less meaningful for decision-making. A 95% confidence level means that the conclusions drawn from the results of sampling will detect non-compliant consignments, on average, 95 times out of 100, or that 5% of non-compliant consignments will not be detected.

1.4 Efficacy of detection

The efficacy of visual inspection or of a test is the probability that an inspection or test of an infested unit(s) will detect a pest. The efficacy should not be assumed to be 100%. For example, pests may be cryptic and difficult to visually detect, and plants may not express symptoms of disease. It is possible to include lower efficacy values (for instance, an 80% chance of detecting the pest when an infested unit is inspected) in the determination of sample size.

1.5 Sample size

The sample size is the number of units selected from the lot or consignment that will be inspected or tested.

1.6 Tolerance level

Tolerance refers to the percentage of infestation in a consignment that is the threshold for action. Exceeding the tolerance may result in phytosanitary action being taken. In many cases, the level of detection should be less than, or equal to, the tolerance (e.g. for regulated non-quarantine pests refer ISPM No. 21: *Pest risk analysis for regulated non-quarantine pests*, section 4.4).

2. Links between the Parameters

The five parameters (acceptance number, level of detection, confidence level, efficacy of detection and sample size) are statistically related. The NPPO should determine the efficacy of the inspection method used and the acceptance number in the sample; any two of the remaining three parameters can also be chosen, and the third will be determined from the values chosen for the rest.

If a tolerance based on risk analysis is used, the level of detection chosen should be equal to (or less than, if the acceptance number is greater than zero) the tolerance, to ensure that consignments having an infestation level greater than the tolerance will be detected with the specified confidence level.

If no pests are detected in the sample, then the percentage of infestation in the consignment cannot be stated beyond the fact that it falls below the level of detection at the stated confidence level. If the pest is not detected with the appropriate sample size, the confidence level gives a probability that the tolerance is not exceeded. However, it should be noted that if the tolerance is greater than zero, consignments that do, in fact, conform to the NPPO's requirements may be subjected to phytosanitary action if pests are found in the sample.

3. Sample Unit

Sampling first involves the identification of the appropriate unit for sampling (for example, a fruit, stem, bouquet, unit of weight, bag or carton). The determination of the sample unit is affected by issues related to homogeneity in the distribution of pests through the commodity, whether the pests are sedentary or mobile, how the consignment is packaged and operational considerations. For example, if determined solely on pest biology, the appropriate sample unit might be an individual plant or plant product in the case of a sedentary pest, whereas in the case of mobile pests, a carton or other commodity container may be the preferred sample unit. However, when inspection is to detect more than one type of pest, other considerations (e.g. practicality of using different sample units) may apply.

4. Lot Identification

A consignment may consist of one or more lots. Where a consignment comprises more than one lot, the inspection to determine compliance may have to consist of several separate visual examinations, and therefore the lots will have to be sampled separately. Whether or not a lot will be inspected or tested should be determined using factors stated in ISPM No. 23 (*Guidelines for inspection*), section 1.5.

A lot to be sampled should be a number of units of a single commodity identifiable by its homogeneity in factors such as:

- origin
- grower
- packing facility
- species, variety, or degree of maturity
- exporter
- pests of concern and characteristics of the pests of concern
- treatment at origin
- type of processing.

The criteria used by the NPPO to distinguish lots should be consistently applied for similar consignments.

Treating multiple commodities as a single lot for convenience may make it impossible to draw statistical inferences from the results of the sampling.

5. Sampling Methods

The sampling method is the process approved by the NPPO to select units for inspection. Sampling for phytosanitary inspection of consignments or lots is done by taking units from the consignment or lot without replacement of the units selected[2].

In most cases the selection of an appropriate sampling method is necessarily dependent on information available about the pest's prevalence and distribution as well as the operational parameters associated with the inspection situation in question. In most phytosanitary applications, operational limitations will dictate the practicality of sampling under one or another method. Subsequently, determining the statistical validity of practical methods will narrow the field of alternatives.

The sampling method that is ultimately selected by the NPPO should be operationally feasible and be the most technically appropriate to achieve the objective. Operational feasibility is clearly linked to judgements concerning situation-specific factors.

5.1 Statistically based methods

5.1.1 Simple random sampling

Simple random sampling involves drawing the sample units in accordance with a tool such as a random numbers table. The use of a predetermined randomization process is what distinguishes this method from haphazard sampling (see below).

This method is often used when little is known about the pest distribution or rate of infestation. To use this method, each unit should have an equal probability of selection. In cases where a pest is not distributed randomly through the lot, this method may not be optimal.

5.1.2 Systematic sampling

Systematic sampling involves drawing a sample from every *n*th unit of the lot. The first selection must be made at random, and the assumption is made that the pest is randomly distributed through the lot. Biased results are possible if

[2] Sampling without replacement does not mean that a selected item cannot be returned to a consignment (except for destructive sampling); it means only that the inspector should not return it before selecting the remainder of the sample.

pests are not randomly distributed. Such biases may be reduced when consignments have been subjected to grading, sorting and mixing during the packing process.

Two advantages of this method are that the sampling process may be automated through machinery, and it requires the use of a random process only to select the first unit.

5.1.3 Stratified sampling

Stratified sampling involves separating the lot into separate subdivisions (i.e. strata) and then drawing some of the samples from each subdivision. Within each subdivision, samples are taken using a particular method (systematic or random). Under some circumstances, different numbers of samples may be taken from each subdivision – for instance, the number of samples may be proportional to the size of the subdivision, or based on prior knowledge concerning the infestation of the subdivisions.

Stratified sampling can be advantageous when strata have different infestation levels or when it can not be assumed that the pest is randomly distributed through the lot. Infestation levels may vary across a lot depending on harvesting and packing procedures or storage conditions.

5.1.4 Sequential sampling

Sequential sampling involves drawing a series of samples using one of the above methods. After each sample (or group) is drawn, the data are accumulated and compared with predetermined ranges to decide whether to accept the consignment, reject the consignment or continue sampling.

This method can be used when a non-zero tolerance exists and the first set of samples does not provide sufficient information to allow a decision to be made on whether or not the tolerance is exceeded. This method would not be used if the acceptance number in a sample of any size is zero. Sequential sampling may reduce the number of samples required for a decision to be made, or reduce the possibility of rejecting a conforming consignment.

5.1.5 Clustered sampling

Clustered sampling involves selecting groups of units (for example, boxes of fruit, bunches of flowers) to make up the total number of sample units required from the lot. It is useful as a means to reduce the resources devoted to sampling and works well when the distribution of pests is expected to be random.

Clustered sampling can be stratified, and can use either systematic or random methods for selecting the groups. Of the statistically based methods, this method is often the most practical to implement.

5.2 Other sampling methods

The following methods may be used for operational considerations or when the goal is purely detection of pests; however, users should be aware that these methods do not result in each unit having an equal probability of being included in the sample, so the true confidence level and level of detection may not equal the values chosen by the NPPO.

5.2.1 Convenience sampling

Convenience sampling involves selecting the most convenient (e.g. accessible, cheapest, fastest) units from the lot, without units being selected in a random or systematic manner.

5.2.2 Haphazard sampling

Haphazard sampling involves selecting arbitrary units without using a true randomization process. This may often appear to be random because the inspector is not conscious of having any selection bias. However, unconscious bias may occur, so that the degree to which the sample is representative of the lot is unknown.

5.2.3 Selective or biased sampling

Selective or biased sampling involves selecting samples from parts of the lot most likely to be infested, or units that are obviously infested, in order to increase the chance of detecting a specific pest. This method may rely on inspectors who are experienced with the commodity and familiar with the pest's biology. Use of this method may also be triggered through a pathway analysis identifying a specific section of the lot with a higher probability of being infested (e.g. a wet section of timber may be more likely to harbour nematodes). Because the sample is biased, a probabilistic statement about the infestation level in the lot can not be made, although if the sole purpose of sampling is to increase the chance of finding a pest, this method is valid. A separate sample of the commodity may be required to meet general confidence in detection of other pests.

6. Selecting a Sampling Method

If sampling is undertaken to increase the chance of detecting a specific pest, biased sampling may be the preferred option, as long as the inspectors can identify the section(s) of the lot with a higher probability of being infested. Without this knowledge, one of the statistically based methods will be more appropriate.

If sampling is undertaken to provide knowledge about the general phytosanitary condition of a consignment, to detect multiple quarantine pests, to verify compliance with phytosanitary requirements, or for information gathering, one of the statistically based methods will be appropriate.

In selecting a statistically based method, consideration may be given to how the consignment has been treated in harvesting, sorting and packing, and whether the pest is likely to be randomly distributed through the consignment. Sampling methods may be combined: for instance, a stratified sample may have either random or systematic selection of sample units (or clusters) within strata.

If sampling is undertaken to determine whether a specific non-zero tolerance has been exceeded, a sequential sampling method may be appropriate.

Once a sampling method has been selected and applied, resampling with the aim of achieving a different result is not valid.

7. Sample Size Determination

Ideally, the NPPO should select a confidence level (e.g. 95%), a level of detection (e.g. 5%) and an acceptance number (e.g. zero), and determine the efficacy of visual inspection or testing (e.g. 80%). From these values and the lot size, a sample size can be calculated.

7.1 Random distribution of the pest in the lot

Because sampling is done without replacement and the population size is finite, the hypergeometric distribution should be used to determine the sample size. This distribution gives a probability of detecting a certain number of infested units in a sample of a given size drawn from a lot of a given size, when a specific number of infested units exist in the lot (see Appendix 1). The number of infested units in the lot is estimated as the level of detection multiplied by the total number of units in the lot.

As lot size increases, the sample size required for a specific level of detection and confidence level begins to approach an upper limit. When the sample size is less than 5% of the lot size, the sample size can be calculated using either the binomial or Poisson distribution (see Appendix 2). All three distributions (hypergeometric, binomial and Poisson) give almost identical sample sizes for specific confidence and detection levels at large lot sizes, but binomial and Poisson distributions are easier to calculate.

7.2 Aggregated distribution of the pest in the lot

Most pest populations are aggregated to some degree in the field. Because commodities may be harvested and packed in the field, without being graded or sorted, the distribution of infested units in the lot may not be random. Aggregation of infested units of a commodity will always lower the likelihood of finding an infestation, although using a stratified sampling method may help increase the chance of detecting an aggregated infestation.

When pests are aggregated, the calculation of sample size should ideally be performed using a beta-binomial distribution (see Appendix 3). However, this calculation requires knowledge of the degree of aggregation, which is generally not known and therefore this distribution is not practical for general use. One of the other distributions (hypergeometric, binomial or Poisson) can be used; however, the confidence level of the sampling will decline as the degree of aggregation increases.

7.3 Fixed proportion sampling

Sampling a fixed proportion of the units in the lot (e.g. 2%) results in inconsistent levels of detection or confidence levels when lot size varies. As shown in Appendix 4, fixed proportion sampling results in changing confidence levels for a given level of detection, or in changing levels of detection for a given confidence level.

8. Varying Level of Detection

The choice of a constant level of detection may result in a varying number of infested units entering with imported consignments because lot size varies (e.g. a 1% infestation level of 1000 units corresponds to 10 infested units, while a 1% infestation level of 10,000 units corresponds to 100 infested units). Ideally the selection of a level of detection will reflect in part the number of infested units entering on all consignments within a particular period of time. If NPPOs want to manage the number of infested units entering with each consignment as well, a varying detection level may be used. A tolerance would be specified in terms of a number of infested items per consignment, and the sample size would be set in order to give the desired confidence and detection levels (see Appendix 4).

9. Outcome of Sampling

The outcome of sampling may result in phytosanitary action being taken (see ISPM No. 23: *Guidelines for inspection*, section 2.5).

APPENDIX 1

CALCULATING SAMPLE SIZES FOR SMALL LOTS: HYPERGEOMETRIC-BASED SAMPLING

The hypergeometric distribution is appropriate to describe the probability of finding a pest in a relatively small lot. A lot is considered as small when the sample size is more than 5% of the lot size. In this case, sampling of one unit from the lot, the probability of finding an infested unit in the next unit selected changes.

The probability of detecting i infested units in a sample is given by

$$P(X = i) = \frac{\binom{A}{i}\binom{N-A}{n-i}}{\binom{N}{n}}$$

Where:

$$\binom{a}{b} = \frac{a!}{b!(a-b)!} \quad \text{where a!= a(a-1)(a-2)….. 1 and 0!=1}$$

P (X = i) is the probability of observing i infested units in the sample, where i = 0, …, *n*. The confidence level corresponds to: 1- P (X = i)
A = number of infested units in the lot that could be detected if every unit in the lot was inspected or tested, given the efficacy of the inspection method or test (detection level × N × efficacy, truncated to an integer)
i = number of infested units in the sample
N = number of units in the lot (size of the lot)
n = number of units in the sample (sample size)

An approximation that can be used for the probability of finding no infested units is

$$P(X=0) = \left(\frac{N-A-u}{N-u}\right)^n$$

where u = (n-1)/2 (Cochran, 1977).

Solving the equation to determine *n* is difficult arithmetically but can be done with approximation or through maximum likelihood estimation.

Tables 1 and 2 show sample sizes calculated for different lot sizes, levels of detection and confidence levels, when the acceptance number is 0.

Table 1. Table of sample sizes for 95% and 99% confidence levels at varying detection levels according to lot size, hypergeometric distribution

Number of units in lot	P = 95% (confidence level) % level of detection × efficacy of inspection or test					P = 99% (confidence level) % level of detection × efficacy of inspection or test				
	5	2	1	0.5	0.1	5	2	1	0.5	0.1
25	24*	-	-	-	-	25*	-	-	-	-
50	39*	48	-	-	-	45*	50	-	-	-
100	45	78	95	-	-	59	90	99	-	-
200	51	105	155	190	-	73	136	180	198	-
300	54	117	189	285*	-	78	160	235	297*	-
400	55	124	211	311	-	81	174	273	360	-
500	56	129	225	388*	-	83	183	300	450*	-
600	56	132	235	379	-	84	190	321	470	-
700	57	134	243	442*	-	85	195	336	549*	-
800	57	136	249	421	-	85	199	349	546	-
900	57	137	254	474*	-	86	202	359	615*	-
1 000	57	138	258	450	950	86	204	368	601	990
2 000	58	143	277	517	1553	88	216	410	737	1800
3 000	58	145	284	542	1895	89	220	425	792	2353
4 000	58	146	288	556	2108	89	222	433	821	2735
5 000	59	147	290	564	2253	89	223	438	840	3009
6 000	59	147	291	569	2358	90	224	442	852	3214
7 000	59	147	292	573	2437	90	225	444	861	3373
8 000	59	147	293	576	2498	90	225	446	868	3500
9 000	59	148	294	579	2548	90	226	447	874	3604
10 000	59	148	294	581	2588	90	226	448	878	3689
20 000	59	148	296	589	2781	90	227	453	898	4112
30 000	59	148	297	592	2850	90	228	455	905	4268
40 000	59	149	297	594	2885	90	228	456	909	4348
50 000	59	149	298	595	2907	90	228	457	911	4398
60 000	59	149	298	595	2921	90	228	457	912	4431
70 000	59	149	298	596	2932	90	228	457	913	4455
80 000	59	149	298	596	2939	90	228	457	914	4473
90 000	59	149	298	596	2945	90	228	458	915	4488
100 000	59	149	298	596	2950	90	228	458	915	4499
200 000+	59	149	298	597	2972	90	228	458	917	4551

Some scenarios presented in the tables result in a fraction of a unit being infested (for example, 300 units with 0.5% infestation corresponds to 1.5 infested units in the shipment). This is not possible for an individual shipment (whole numbers of units are infested). As a result, values are given for the calculated number of infested units rounded down to a whole number. The result is that the sampling intensity goes up slightly, and may be greater for a shipment size where the number of infested units is rounded down than for a larger shipment where a larger number of infested units are calculated (e.g. compare results for 700 and 800 units in the lot). It also means that a slightly lower proportion of infested units might be detected than the proportion indicated by the table, or that such infestation is more likely to be detected than the confidence level shown. These values are marked with an asterisk (*) in the table.

Some of the scenarios that are presented are not possible (less than one unit infested), and these are marked with a dash (-) in the table.

Table 2: Table of sample sizes for 80% and 90% confidence levels at varying detection levels according to lot size, hypergeometric distribution

Number of units in lot	P = 80% (confidence level) % level of detection × efficacy of inspection or test					P = 90% (confidence level) % level of detection × efficacy of inspection or test				
	5	2	1	0.5	0.1	5	2	1	0.5	0.1
100	27	56	80	-	-	37	69	90	-	-
200	30	66	111	160	-	41	87	137	180	-
300	30	70	125	240*	-	42	95	161	270*	-
400	31	73	133	221	-	43	100	175	274	-
500	31	74	138	277*	-	43	102	184	342*	-
600	31	75	141	249	-	44	104	191	321	-
700	31	76	144	291*	-	44	106	196	375*	-
800	31	76	146	265	-	44	107	200	350	-
900	31	77	147	298*	-	44	108	203	394*	-
1 000	31	77	148	275	800	44	108	205	369	900
2 000	32	79	154	297	1106	45	111	217	411	1368
3 000	32	79	156	305	1246	45	112	221	426	1607
4 000	32	79	157	309	1325	45	113	223	434	1750
5 000	32	80	158	311	1376	45	113	224	439	1845
6 000	32	80	159	313	1412	45	113	225	443	1912
7 000	32	80	159	314	1438	45	114	226	445	1962
8 000	32	80	159	315	1458	45	114	226	447	2000
9 000	32	80	159	316	1474	45	114	227	448	2031
10 000	32	80	159	316	1486	45	114	227	449	2056
20 000	32	80	160	319	1546	45	114	228	455	2114
30 000	32	80	160	320	1567	45	114	229	456	2216
40 000	32	80	160	320	1577	45	114	229	457	2237
50 000	32	80	160	321	1584	45	114	229	458	2250
60 000	32	80	160	321	1588	45	114	229	458	2258
70 000	32	80	160	321	1591	45	114	229	458	2265
80 000	32	80	160	321	1593	45	114	229	459	2269
90 000	32	80	160	321	1595	45	114	229	459	2273
100 000	32	80	160	321	1596	45	114	229	459	2276
200 000	32	80	160	321	1603	45	114	229	459	2289

APPENDIX 2

SAMPLING OF LARGE LOTS: BINOMIAL OR POISSON BASED SAMPLING

For large lots sufficiently mixed, the likelihood of finding an infested unit is approximated by simple binomial statistics. The sample size is less than 5% of the lot size. The probability of observing i infested units in a sample of *n* units is given by:

$$P\ (X=i) = \binom{n}{i} \phi p^{\,i} (1-\phi p)^{\,n-i}$$

p is the average proportion of infested units (infestation level) in the lot and ϕ represents the percentage inspection efficacy divided by 100.
P (X = i) is the probability of observing i infested units in the sample. The confidence level corresponds to: 1- P (X = i), i = 0, 1, 2, …, n.
For phytosanitary purposes, the probability of not observing a defect in the sample is determined. The probability of not observing an infested unit in a sample of *n* units is given by

$$P(X=0) = (1-\phi\ p)^n$$

The probability of observing at least one infested unit is then:

$$P(X>0) = 1 - (1-\phi\ p)^n$$

This equation can be rearranged to determine n

$$n = \frac{\ln[1 - P(X\ > 0)]}{\ln(1 - \phi p)}$$

The sample size n can be determined with this equation when the infestation level (p), efficacy (ϕ) and the confidence level (1- P (X > 0)) are determined by the NPPO.

The binomial distribution can be approximated with the Poisson distribution. As n gets larger and p gets smaller, the binomial distribution equation given above tends to the Poisson distribution equation given below,

$$P(X=i) = \frac{(n\phi p)^{i} e^{-n\phi p}}{i!}$$

where *e* is the value of the natural logarithm.

The probability of finding no infested units simplifies to

$$P(X=0) = e^{-n\phi p}$$

The probability of finding at least one infested unit (the confidence level) is calculated as

$$P(X>0) = 1-e^{-n\phi p}$$

Solving for n gives the following, which can be used to determine the sample size:

$$n = -\ln[1-P(X>0)]/\phi p$$

Tables 3 and 4 show sample sizes when the acceptance number is 0, calculated for different levels of detection, efficacy and confidence levels with the binomial and Poisson distributions, respectively. A comparison of the case for 100% efficacy with the sample sizes in Table 1 (see Appendix 1) shows that the binomial and Poisson give very similar results to the hypergeometric distribution when n is large and p is small.

Table 3: Table of sample sizes for 95% and 99% confidence levels at varying detection levels, according to efficacy values where lot size is large and sufficiently mixed, binomial distribution

% efficacy	P = 95% (confidence level) % detection level					P = 99% (confidence level) % detection level				
	5	2	1	0.5	0.1	5	2	1	0.5	0.1
100	59	149	299	598	2995	90	228	459	919	4603
99	60	150	302	604	3025	91	231	463	929	4650
95	62	157	314	630	3152	95	241	483	968	4846
90	66	165	332	665	3328	101	254	510	1022	5115
85	69	175	351	704	3523	107	269	540	1082	5416
80	74	186	373	748	3744	113	286	574	1149	5755
75	79	199	398	798	3993	121	305	612	1226	6138
50	119	299	598	1197	5990	182	459	919	1840	9209
25	239	598	1197	2396	11982	367	919	1840	3682	18419
10	598	1497	2995	5990	29956	919	2301	4603	9209	46050

Table 4: Table of sample sizes for 95% and 99% confidence levels at varying detection levels, according to efficacy values where lot size is large and sufficiently mixed, Poisson distribution

% efficacy	P = 95% (confidence level) % detection level					P = 99% (confidence level) % detection level				
	5	2	1	0.5	0.1	5	2	1	0.5	0.1
100	60	150	300	600	2996	93	231	461	922	4606
99	61	152	303	606	3026	94	233	466	931	4652
95	64	158	316	631	3154	97	243	485	970	4848
90	67	167	333	666	3329	103	256	512	1024	5117
85	71	177	353	705	3525	109	271	542	1084	5418
80	75	188	375	749	3745	116	288	576	1152	5757
75	80	200	400	799	3995	123	308	615	1229	6141
50	120	300	600	1199	5992	185	461	922	1843	9211
25	240	600	1199	2397	11983	369	922	1843	3685	18421
10	600	1498	2996	5992	29958	922	2303	4606	9211	46052

APPENDIX 3

SAMPLING FOR PESTS WITH AN AGGREGATED DISTRIBUTION: BETA-BINOMIAL BASED SAMPLING

In the case of aggregated spatial distribution, sampling can be adjusted to compensate for aggregation. For this adjustment to apply, it should be assumed that the commodity is sampled in clusters (e.g. boxes) and that each unit in a chosen cluster is examined (cluster sampling). In such cases, the proportion of infested units, *f*, is no longer constant across all clusters but will follow a beta density function.

$$P(X=i) = \binom{n}{i} \frac{\prod_{j=0}^{i-1}(f+j\theta)\prod_{j=0}^{n-i-1}(1-f+j\theta)}{\prod_{j=0}^{n-1}(1+j\theta)} \quad (1)$$

f is the average proportion of infested units (infestation level) in the lot.
P (X = i) is the probability of observing i infested units in a batch.
n = number of units in a batch.
$\prod$ is the product function
θ provides a measure of aggregation for the *j*th batch θ is $0<\theta<1$.

Phytosanitary sampling is often more concerned with the probability of not observing an infested unit after inspecting several batches. For a single batch, the probability that X=0 is
$P(X=0) = 1- \prod_{j=0}^{n-1}(1-f+j\theta)/(1+j\theta)$ and the probability that each of several batches has no infested unit, Pr(X=0), equals $P(X=0)^m$, where *m* is the number of batches. When *f* is low, equation 1 can be estimated by

$$P(X=0) \approx (1-n\theta)^{-(f/\theta)}$$
$$Pr(X=0) \approx (1+n\theta)^{-(mf/\theta)}$$

The probability of observing one or more infested units is given by 1- Pr (X=0).

This equation can be rearranged to determine *m*

$$m = \frac{-\theta}{f}\left[\frac{\ln(1-P(x>0)}{\ln(1+n\theta)}\right]$$

When the degree of aggregation and the confidence level are fixed, the size of the sample can be determined. Without the degree of aggregation, the sample size can not be determined.

Efficacy (ϕ) values of less than 100% can be included by substituting ϕf for *f* in the equations.

APPENDIX 4

COMPARISON OF HYPERGEOMETRIC AND FIXED PROPORTION SAMPLING RESULTS

Table 5: Confidence in the results of different sampling schemes for a 10% detection level

	Hypergeometric-based sampling		Fixed proportion sampling (2%)	
Lot size	sample size	confidence in detection	sample size	confidence in detection
10	10	1	1	0.100
50	22	0.954	1	0.100
100	25	0.952	2	0.191
200	27	0.953	4	0.346
300	28	0.955	6	0.472
400	28	0.953	8	0.573
500	28	0.952	10	0.655
1 000	28	0.950	20	0.881
1 500	29	0.954	30	0.959
3 000	29	0.954	60	0.998

Table 6: Minimum levels that can be detected with 95% confidence using different sampling schemes

	Hypergeometric-based sampling		Fixed proportion sampling (2%)	
Lot size	sample size	minimum detection level	sample size	minimum detection level
10	10	0.10	1	1.00
50	22	0.10	1	0.96
100	25	0.10	2	0.78
200	27	0.10	4	0.53
300	28	0.10	6	0.39
400	28	0.10	8	0.31
500	28	0.10	10	0.26
1 000	28	0.10	20	0.14
1 500	29	0.10	30	0.09
3 000	29	0.10	60	0.05

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INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES

CLASSIFICATION OF COMMODITIES INTO PHYTOSANITARY RISK CATEGORIES

(200-)

CONTENTS

INTRODUCTION

SCOPE

This standard provides guidance on categorizing commodities according to their phytosanitary risk. The categorization is based on the method and level of processing to which a commodity has been subjected and the commodity's intended use. The standard also provides guidance for determining phytosanitary risk management measures for each category, as appropriate.

REFERENCES

Glossary of phytosanitary terms, 2007. ISPM No. 5, FAO, Rome.
Guidelines for a phytosanitary import regulatory system, 2004. ISPM No. 20, FAO, Rome.
Guidelines for inspection, 2005. ISPM No. 23, FAO, Rome.
Guidelines for phytosanitary certificates, 2001. ISPM No. 12, FAO, Rome.
Guidelines for regulated wood packaging material in international trade, 2002. ISPM No. 15, FAO, Rome.
International Plant Protection Convention, 1997. FAO, Rome.
Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms, 2004. ISPM No. 11, FAO, Rome.

DEFINITIONS

Definitions of phytosanitary terms used in the present standard can be found in ISPM No. 5 (*Glossary of phytosanitary terms*).

OUTLINE OF REQUIREMENTS

The concept of phytosanitary risk categorization of commodities combines the method and level of processing to which a commodity has been subjected with the commodity's intended use and consequent potential for association with regulated pests.

This combination allows phytosanitary risk categories to be assigned. The objective of such categories is to provide importing contracting parties with guidelines to better identify the need for a pathway-initiated pest risk analysis (PRA) in order to facilitate the decision-making process.

This standard outlines four different phytosanitary risk categories (two for processed commodities, two for unprocessed commodities) and provides some examples of the methods of processing and the resultant commodities associated with each of the first two categories.

BACKGROUND

As a result of the method of processing to which they have been subjected, some commodities in international trade may not have the potential to introduce regulated pests and so do not meet the definition of a regulated article. In this case phytosanitary measures are not required. Other commodities, after processing, may still present a phytosanitary risk and so may be subject to appropriate phytosanitary measures.

Some intended uses (e.g. planting) have a much higher probability of introducing regulated pests than others (e.g. processing) (ISPM No. 11: *Pest risk analysis for quarantine pests, including analysis of environmental risks and living modified organisms*, 2004, section 2.2.1.5).

The concept of phytosanitary risk categorization of commodities combines the method and level of processing to which a commodity has been subjected with its intended use and consequent potential for association with regulated pests.

The objective of the classification of commodities into phytosanitary risk categories is to provide importing contracting parties with guidelines to better identify the need for a pathway-initiated PRA in order to facilitate the decision-making process.

This standard is based on the concepts of intended use of a commodity and the nature of its processing that can be found in other ISPMs:

Intended use:

- ISPM No. 11 (*Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms*, 2004), sections 2.2.1.5 and 2.2.3. When analysing the probabilities of transfer of pests to a suitable host and of their spread after establishment, one of the factors to be considered is the intended use of the commodity.
- ISPM No. 12 (*Guidelines for phytosanitary certificates*), section 2.1. Different phytosanitary requirements may apply to the different intended end uses as indicated on the phytosanitary certificate.

Method and level of processing:
- ISPM No. 12 (*Guidelines for phytosanitary certificates*), section 1.1, establishes that importing countries should require phytosanitary certificates only for regulated articles. Phytosanitary certificates may also be used for certain plant products that have been processed where such products (e.g. wood, cotton), by their nature or that of their processing, have a potential for introducing regulated pests. Importing countries should not require phytosanitary certificates for plant products that have been processed in such a way that they have no potential for introducing regulated pests, or for other articles that do not require phytosanitary measures.
- ISPM No. 15 (*Guidelines for regulating wood packaging material in international trade*), section 2, indicates that when wood packaging is made wholly of wood-based products such as plywood, particle board, oriented strand board or veneer that have been created using glue, heat and pressure, or a combination thereof, it should be considered sufficiently processed to have eliminated the risk associated with the raw wood. It is unlikely to be infested by raw wood pests during its use and therefore should not be regulated for these pests.
- ISPM No. 23 (*Guidelines for inspection*), section 2.3.2. Inspection can be used to verify the compliance with some phytosanitary requirements. Examples include degree of processing.

Intended use together with method and level of processing:
- ISPM No. 20 (*Guidelines for a phytosanitary import regulatory system*), section 5.1.4, indicates that PRA may be done on a specific pest or on all the pests associated with a particular pathway (e.g. a commodity). A commodity may be classified by its level of processing and/or its intended use.
- ISPM No. 23 (*Guidelines for inspection*), section 1.5. One of the factors, among others, to decide the use of inspection as a phytosanitary measure is the commodity type and intended use.

REQUIREMENTS

The application of the concept of phytosanitary risk categories follows, in particular, the principles and obligations of technical justification, risk analysis, risk management, minimal impact, harmonization and sovereignty.

When the entry requirements for a commodity need to be determined the importing country could classify it into a phytosanitary risk category, which could be used to identify whether further analysis is required. In order to categorize the commodity, the following should be considered:
- method and level of processing
- intended use of the commodity.

Commodities can be:
- processed: those in which raw material is transformed in differing ways and degrees
- non-processed: those in which raw material is not transformed.

1. Elements of Phytosanitary Risk Categorization of Commodities

To identify a commodity's risk category, the method and level of processing to which a commodity has been subjected should be considered before its intended use. This single parameter, by itself, could significantly change the nature of the commodity, rendering it unable to harbour or spread pests. A commodity processed in such a way does not meet the definition of a regulated article.

However, if, after processing, a commodity still meets the definition of a regulated article, the intended use should then be considered.

1.1 Method and level of processing

The primary objective of processing is to modify a commodity, but processing may also have an effect on any associated regulated pest, and hence affect the potential to harbour pests of the commodity.

It is necessary to know the type of processing undertaken in order to categorize the commodity. In some cases it is also necessary to know the level (or degree) of processing (e.g. temperature and cooking duration) in addition to the type of processing used.

Based on the method and level of processing commodities can be broadly divided into two types as follows:
- Type A: processed to the point where the commodity does not meet the definition of a regulated article
- Type B: processed to a point where the commodity remains capable of harbouring or spreading regulated pests.

Annex 1 provides examples of different processes in each of the two types above, and the resulting processed commodities obtained.

If an assessment of the method and level of processing concludes that a commodity does not have the capacity to harbour or spread regulated pests, no further analysis is necessary because the commodity does not meet the definition

of a regulated article. However, if an assessment of the method and level of processing concludes that a commodity retains the capacity to harbour or spread regulated pests, the intended use should then be considered.

For non-processed commodities the intended use should always be considered.

1.2 Intended use

Intended use is defined as the declared purpose for which plants and plant products or other regulated articles are imported, produced or used (ISPM No. 5: *Glossary of phytosanitary terms*, 2007). The intended use of a commodity may be for:

- planting
- consumption without further transformation, including decorative and functional uses
- processing.

Some intended uses (e.g. planting) are associated with a much higher probability of introducing regulated pests than others (e.g. processing).

Its intended use can affect a commodity's potential to introduce or spread regulated pests, and hence the phytosanitary risks associated with the commodity. This could result in the application of different phytosanitary measures for a plant or plant product based on its intended use (e.g. soybean seed and soybean grain). Any phytosanitary measures applied should be consistent with the phytosanitary risk presented.

2. Phytosanitary Risk Categories and Measures

Taking into account the method and level of processing to which a commodity has been subjected, its intended use and its subsequent potential for harbouring or spreading regulated pests allows phytosanitary risk categories to be assigned.

Each phytosanitary risk category is described below, along with guidance on appropriate phytosanitary measures.

Contaminating pests, as defined in ISPM No. 5 (*Glossary of phytosanitary terms*), or storage pests that may become associated with the commodity after processing are not considered in the risk categorization process outlined in this standard. These pests could be detected during inspection.

Category 1. Commodities have been processed to the point where they do not meet the definition of a regulated article. Hence, no further analysis is necessary and phytosanitary measures are not applicable.

Annex 1 (Type A) provides examples of processes and the resultant commodities that meet the criteria for category 1.

Category 2. Commodities have been processed but may still harbour or spread regulated pests. The intended use may be consumption or processing. PRA may be necessary.

Although commodities in category 2 have been processed, the processing method may not eliminate regulated pests of concern. Consideration should therefore be given to the level of processing applied. If it is determined that the method and level of processing do not eliminate regulated pests, consideration should then be given to the intended use of the commodity before determining that phytosanitary measures must be put in place. A PRA may be needed to determine this, and the range of applicable phytosanitary measures outlined by the PRA may differ depending on the intended use of the commodity (consumption or processing).

Annex 1 (Type B) provides examples of processes and the resultant commodities that meet the criteria for category 2.

In cases where the method and level of processing is known and through evaluation it is shown that the processed commodity presents no phytosanitary risk and therefore does not meet the definition of a regulated article, the commodity should be reclassified into category 1.

Category 3. Commodities have not been processed and the intended use is consumption or processing. PRA is required, as appropriate.

Examples of commodities in this category include fresh fruits and vegetables.

Because commodities in category 3 are not processed and therefore have the potential to harbour regulated pests, establishment of phytosanitary measures is always going to require a PRA to be performed. Depending on the intended use of the commodity (consumption or processing), the range of phytosanitary measures resulting from the PRA may be different.

Category 4. Commodities have not been processed and the intended use is planting. PRA is required.

Examples of commodities in this category include propagative material (e.g. ornamental plants and seeds).

Because commodities in phytosanitary risk category 4 are not processed and their intended use is always for propagation or planting, their potential to introduce or spread regulated pests is higher than that for other intended uses. Therefore a PRA is always needed to establish phytosanitary measures. For this category, some specific phytosanitary measures already exist, such as post-entry quarantine.

The decision-making process outlined in this ISPM is pictured in a flow chart in Appendix 1.

ANNEX 1

EXAMPLES OF METHODS OF PROCESSING AND THE RESULTANT TYPES OF COMMODITY

TYPE A Processed to the point where the commodity does not meet the definition of a regulated article.

PROCESS	DESCRIPTION	EXAMPLE OF RESULTANT COMMODITY	OBSERVATIONS
Carbonization	Action to reduce an organic body to charcoal	Charcoal	
Chemical pressure impregnation	Treatment of wood with a chemical preservative through a process of pressure in accordance with an officially recognized technical specification and in accordance with ISPM No. 15	Impregnated wood	Applies only to wood
Extraction	Physical or chemical process to obtain refined products	Oils, alcohol, essences	
Fermentation	A process by which food goes through a chemical change caused by enzymes produced from bacteria, micro-organisms or yeasts	Wines, liquors, beer and other alcoholic beverages	May be combined with pasteurization
Freeze-drying	Action of freezing and dehydration by sublimation	Freeze-dried fruits, cut flowers, bouquets	
Freezing	Action of keeping fruits and vegetables at temperatures below freezing to preserve quality	Frozen fruits and vegetables	
Grinding	Action of breaking a body to turn it into powder	Powdered herbs and spices, flours	Usually applied to dried products
Lamination	Splitting wood into thin sheets	Veneer sheets, laminate sheets	Applies only to wood
Malting	Action of forcing the germination of cereals seeds in order to improve the palatability of fermented liquids	Malted barley	
Pasteurization	Heating food in order to kill undesirable or harmful micro-organisms	Pasteurized juices, alcoholic beverages (beer, wine)	May be combined with fermentation
Polishing (of grain)	To make smooth and shiny by rubbing or chemical action removing the outer layers from grains	Polished rice	
Preservation in liquid	The process of preparing foods in a suitable liquid medium (e.g. in syrup, brine, oil, vinegar or alcohol) to allow them to be kept for long periods of time without spoiling or deteriorating	Preserved fruits, vegetables, tubers, bulbs	The preservation process should be completed prior to entry
Pulping (of wood)	Mechanical and chemical processing of wood products as part of the process of paper production	Pulped wood/fibres	Applies only to wood
Pureeing (including blending)	Making homogenized and spreadable fruit and/or vegetable tissues, e.g. by rubbing through a sieve or using a blender	Pureed items	Normally combined with pulping fruits or vegetables
Roasting	To dry and brown by exposure to dry heat	Roasted peanuts, coffee and nuts	
Sterilization	Destruction of pests by the application of heat (vapours, dry heat and boiling water), cold, drying, irradiation or chemical treatments	Sterilized substrates, juices	Sterilization may not change the nature of the commodity in an evident way, but significantly affects associated regulated pests
Sugar infusing	Action of coating and infusing fruits with sugar	Crystallized fruit, fruit infused with sugar	Usually combined with pulping, boiling, drying

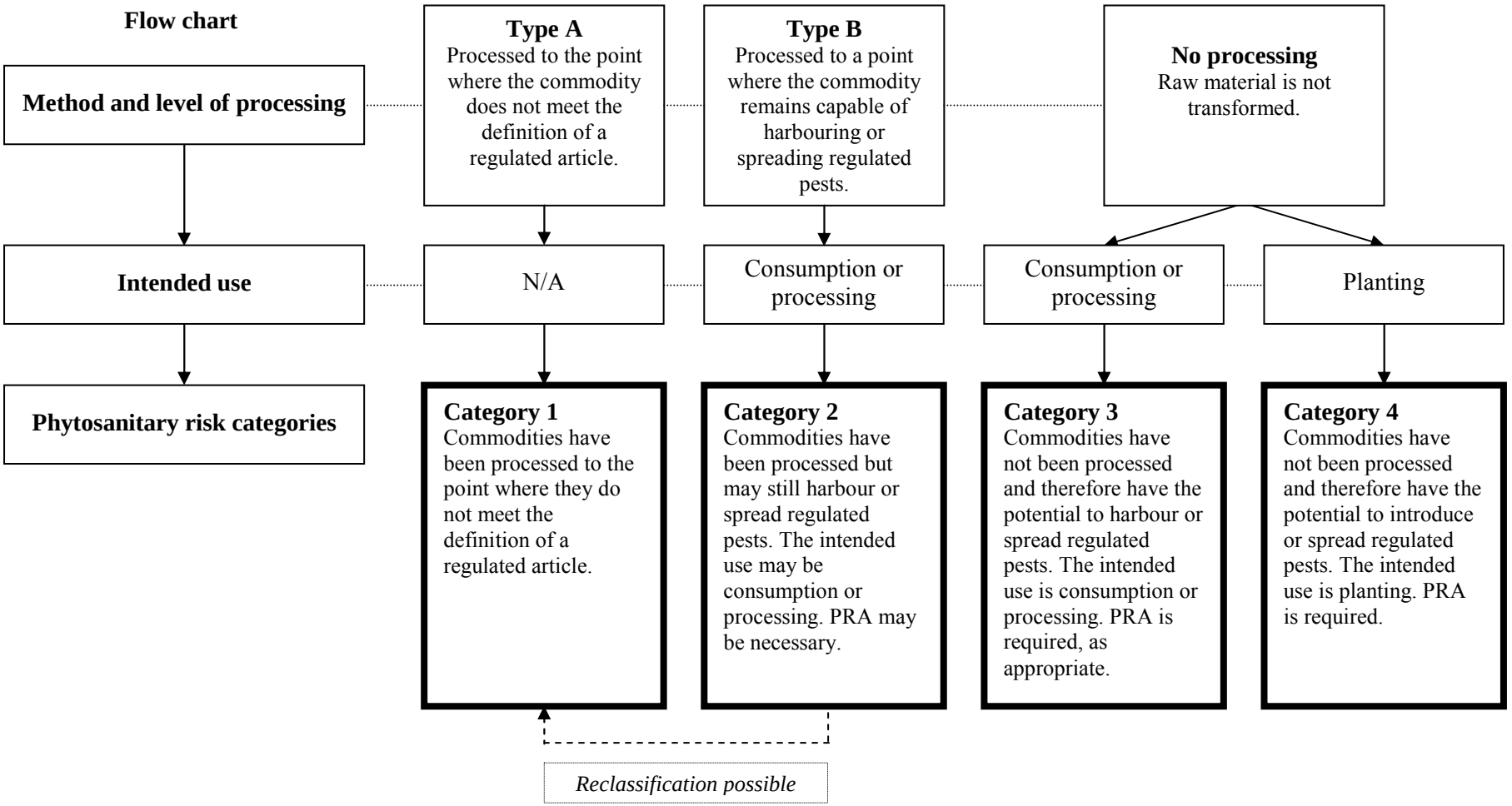
PROCESS	DESCRIPTION	EXAMPLE OF RESULTANT COMMODITY	OBSERVATIONS
Tenderizing	A process to increase the moistness of dried or dehydrated items by the application of steam under pressure or submerging in hot water	Tenderized fruits	Usually applied to a dried commodity

TYPE B Processed to a point where the commodity remains capable of harbouring and spreading regulated pests.

PROCESS	DESCRIPTION	EXAMPLE OF RESULTANT COMMODITY	OBSERVATIONS
Chipping (of wood)	Having a small piece broken off	Chipped wood	
Chopping	To cut into pieces	Chopped fruit, nuts, grains, vegetables	
Compressing	Action of compressing into a compact body	Pressed or pressure-packed fruits and fibres	
Cooking (enough boiling, heating, microwaving, including rice parboiling)	Action of transforming raw material and making suitable for consumption by enough heating	Properly cooked items	Frequently involves chemically transforming a food, thus changing its flavour, texture, appearance, or nutritional properties
Crushing	Action of breaking and reducing the size of plant material by application of force	Herbs, nuts	Usually applied to dried products
Drying/ dehydration	The removal of moisture by natural (e.g. sun) or artificial means	Dehydrated fruit, sun dried tomatoes	
Extrusion/ pressurization	Forcing out a body by pressure	Pellets, reconstituted wood	
Painting (including lacquering, varnishing)	To coat with paint	Wood and canes, fibres	
Peeling and shelling	Action of removing of outer or epidermal tissues	Peeled fruits, grains, nuts	
Post-harvest handling	Process of grading, washing or brushing, and/or waxing fruits and vegetables	Graded, washed, or brushed, and/or waxed fruit and vegetables	Usually carried out in packing houses to fresh products and grains

APPENDIX 1

CLASSIFICATION OF COMMODITIES INTO PHYTOSANITARY RISK CATEGORIES



Draft
For member consultation
June 2007

SUPPLEMENT TO ISPM No. 5 (*GLOSSARY OF PHYTOSANITARY TERMS*)

Supplement No. 3
DEBARKED AND BARK-FREE WOOD

1. Scope

This supplement provides practical guidance to National Plant Protection Organizations (NPPOs) on differentiating between debarked wood and bark-free wood, where removal of bark is required to reduce the risk of introduction and/or spread of quarantine pests associated with bark.

This supplement does not specify the effectiveness or technical justification of removal of bark.

2. References

Pest risk analysis for quarantine pests, including analysis of environmental risks and living modified organisms, 2004. ISPM No. 11, FAO, Rome.

Definitions

For the purpose of adoption, this sub-section contains terms or definitions that are new or revised in the present draft supplement. Once it has been adopted, the sub-section will be deleted, and the new and revised terms and definitions will be transferred into the main text of ISPM No. 5, and will not appear in the supplement.

New term and definition

bark	The layer of a woody trunk, branch or root outside the cambium

Revised terms and definitions

bark-free wood	Wood from which all bark, except ingrown bark around knots and bark pockets between rings of annual growth, has been removed
debarked wood*	Wood that has been subjected to any process designed to remove bark from wood. (Debarked wood is not necessarily bark-free wood.)

* Note: this will replace the current term *debarking*.

3. Background

Wood with bark may be a pathway for the introduction and spread of some quarantine pests. The level of pest risk is dependent on a wide range of factors such as the pest, commodity type (e.g. round wood, sawn wood, wood chips), origin and any treatment applied to the wood.

Some NPPOs apply a requirement for debarked or bark-free wood as a phytosanitary measure. Different interpretations by NPPOs of what constitutes debarked and bark-free wood may have an impact on the international trade in wood.

This supplement does not provide technical justification for the use of measures requiring that wood be debarked or bark-free. It is intended solely to provide guidance to NPPOs that require this type of phytosanitary measure.

Debarking of logs may be undertaken by industry as part of wood processing designed to remove a large majority of the bark, and thereby producing debarked wood, regardless of phytosanitary concern.

Debarking using conventional industrial procedures usually does not remove all of the bark from logs. The amount of bark removed in debarking depends on a number of factors, for example, time of year of harvest, duration of storage before the debarking process, and the age and type of the machinery. In general, up to 3 percent of bark on coniferous logs may remain and up to 10 percent of bark on non-coniferous logs may remain after normal industrial debarking processes.

4. General Observations Regarding Pest Risk Associated with Bark

Removal of bark may reduce the phytosanitary risk from some insects by limiting the possibilities of cambial feeding by the larvae. For other insects, such as bark beetles, the debarking process may leave sufficient bark for the larvae to complete their life cycle. The area around branch bases, for example, is particularly attractive to some bark beetles, and therefore the removal of bark is not always a sufficient phytosanitary measure. It may also have only a limited effect against some fungal organisms. Removal of bark and any associated cankers may reduce the risks presented by some

pathogens and decay organisms. Removal of bark can speed up drying of nutrient-rich outer layers of the wood and alter microclimatic conditions at the bark–wood surface interface leading to fungistatic conditions and reduced sporulation opportunity. When determining import requirements for wood products, contracting parties should also take into account that certain production processes may eliminate pest risks associated with bark (e.g. veneer production).

In terms of this standard, ingrown bark around knots (i.e. areas of bark from branches that have become encased during annual growth) and bark pockets (i.e. areas of bark between rings of annual growth) are usually not considered to present a different phytosanitary risk from that which may already have been determined to exist in relation to their surrounding wood. (A cross-sectional line drawing of wood is provided in Appendix 1.)

Some importing NPPOs require debarked wood or bark-free wood as a phytosanitary measure.

Where risks from bark on wood have been determined to be present and when the phytosanitary measures of debarked and bark-free wood are considered insufficient to ensure that all pest risks are sufficiently managed, these measures may be applied in combination with other measures. Additionally, in some cases the removal of bark from wood may increase the efficacy of other measures and may facilitate visual inspection.

Although many pest risks are reduced by debarking, in some cases the residual bark that remains after debarking may present a phytosanitary risk. In such cases additional phytosanitary measures may be required. One of these, based on technical justification, may be a requirement that the wood be bark-free.

Such phytosanitary measures should not be required where there is evidence that pest risk is adequately managed or absent. This may be because of the origin (which may be a pest free area), the species of pests present in the area or the specific type of wood concerned. Importing NPPOs should determine whether the removal of bark is technically justified before requiring it as a phytosanitary measure.

Based on technical justification the removal of bark may be considered a sufficient phytosanitary measure where it is significantly effective against pests that are dependent on bark for some or all stages of their life cycle. Removal of bark may be limited to certain times of the year, based on the period of emergence of pests in relevant exporting countries and further processing in the importing country, or may be combined with other measures where removal of bark is not sufficient to manage the phytosanitary risk when used alone.

5. Setting Bark Tolerances for Debarked Wood

Contracting parties may require debarked wood as a phytosanitary measure, based on technical justification. They may also set tolerances for residual levels of bark and, in addition to the criteria set out in ISPM No. 11 (*Pest risk analysis for quarantine pests, including analysis of environmental risks and living modified organisms*, 2004), take into account the following:

- species or group of species of tree in relation to pest life cycle
- bark thickness
- shape and size of remaining bark: for example a piece of bark the shape and size of a sheet of paper (e.g. A4 or letter-size) poses a higher risk than a long narrow strip of the same surface area
- for species dependent on bark, the relationship between infestation probability and the quantity of residual bark
- insect gallery size and configuration
- whether pest development occurs within the bark or beneath the bark
- moisture content and temperature of wood to sustain pest development
- climatic and seasonal conditions necessary to sustain pest development throughout the harvesting, storage and transport phases
- potential post-harvest infestation of residual bark and wood
- commodity type (round wood, sawn wood, wood chips)
- transferability of pests from one species of wood to another
- the presence of cankers and blue stain fungi associated with the bark.

6. Bark-free Wood as a Phytosanitary Measure

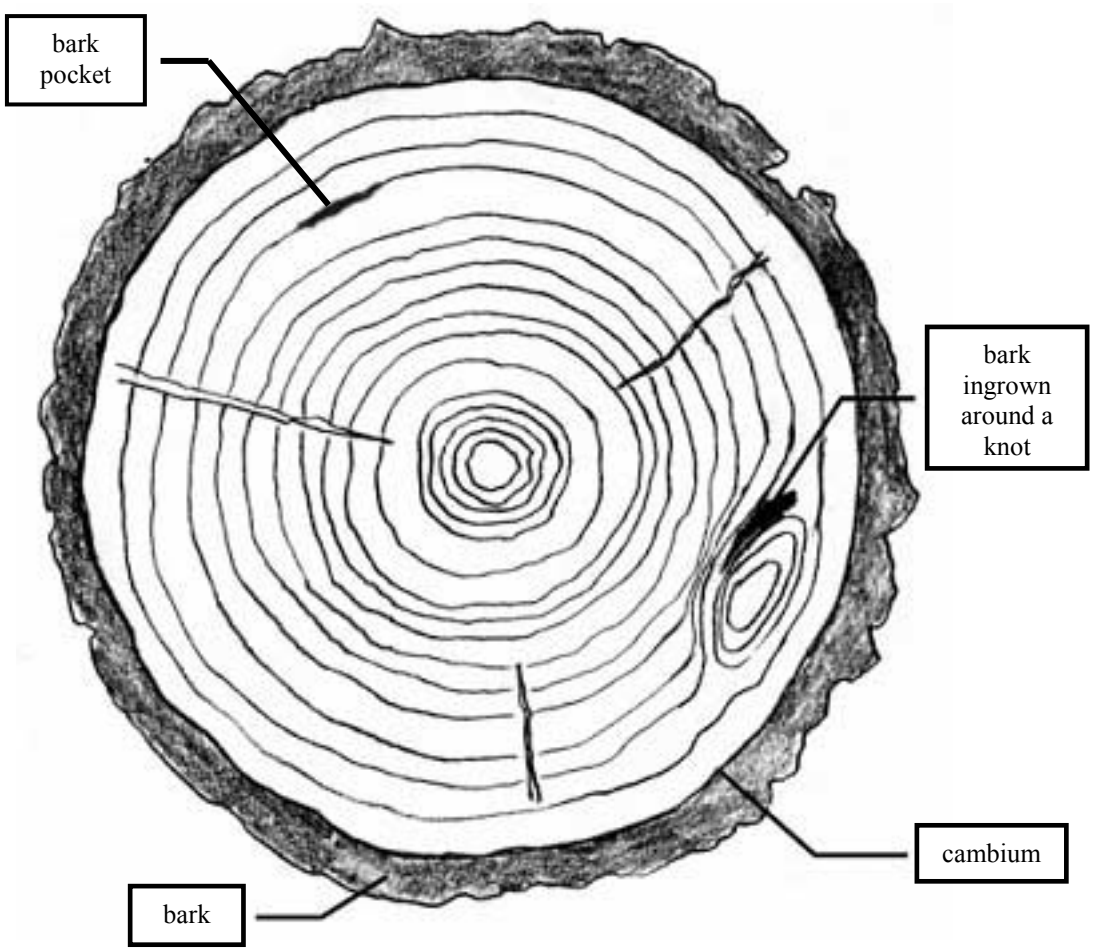
In cases where even small pieces of bark may present a phytosanitary risk, NPPOs may require that the wood be bark-free as a phytosanitary measure, based on technical justification. These cases may include:

- where a risk for a specific pest is identified and can be eliminated by complete removal of the bark.
- when wood is subject to the application of another measure and that measure is insufficient to mitigate the risks sourcing from regulated pests associated with bark, including post-treatment infestation.
- where the presence of bark may reduce the efficacy of another measure required to mitigate pest risks from pests within the cambial layer.

Where importing NPPOs require that wood be bark-free, the commodity should not retain any bark.

APPENDIX 1

CROSS-SECTIONAL LINE DRAWING OF WOOD[3]



[3] This appendix is not an official part of the supplement. It is provided for information only.

Draft ISPM
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June 2007

INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES

ESTABLISHMENT OF AREAS OF LOW PEST PREVALENCE FOR FRUIT FLIES (TEPHRITIDAE)

(200-)

CONTENTS

INTRODUCTION

SCOPE

This standard provides guidelines for the establishment and maintenance of areas of low pest prevalence for fruit flies by a National Plant Protection Organization (NPPO). These areas may then be considered as official pest risk management measures alone, or as part of a system, to facilitate trade of fruit fly host products, or to minimize the spread of regulated fruit flies within a country. This standard applies to fruit flies (Tephritidae) of economic importance.

REFERENCES

Agreement on the Application of Sanitary and Phytosanitary Measures, 1994. World Trade Organization, Geneva.
Determination of pest status in an area, 1998. ISPM No. 8, FAO, Rome.
Establishment of pest free areas for fruit flies (Tephritidae), 2006. ISPM No. 26, FAO, Rome.
Glossary of phytosanitary terms, 2007. ISPM No. 5, FAO, Rome.
Guidelines for surveillance, 1997. ISPM No. 6, FAO, Rome.
International Plant Protection Convention, 1997. FAO, Rome.
Pest reporting, 2002. ISPM No. 17, FAO, Rome.
Requirements for the establishment of areas of low pest prevalence, 2005. ISPM No. 22, FAO, Rome.
The use of integrated measures in a systems approach for pest risk management, 2002. ISPM No. 14, FAO, Rome.

DEFINITIONS

Definitions of phytosanitary terms used in the present standard can be found in ISPM No. 5 (*Glossary of phytosanitary terms*, 2007).

ABBREVIATIONS USED IN THIS STANDARD

FF-ALPP	area of low pest prevalence for fruit flies
FF-PFA	pest free area for fruit flies
FTD	flies per trap per day
FTW	flies per trap per week

OUTLINE OF REQUIREMENTS

The general requirements for establishment and maintenance of an area of low pest prevalence for fruit flies (FF-ALPP) include:

- confirming the operational and economic feasibility of the FF-ALPP
- describing the purpose of the area
- listing the target fruit fly species(s) for the ALPP
- operational plans
- determination of the FF-ALPP
- documentation and record keeping
- supervision activities.

For the establishment of the FF-ALPP, parameters used to estimate fruit fly prevalence and the efficacy of trapping devices for surveillance should be determined as stated in Annex 1. Surveillance, control measures and corrective action planning are required for both establishment and maintenance. Corrective action planning is described in Annex 2.

Other specific requirements include phytosanitary procedures, surveillance, and suspension, loss and reinstatement of the status of the FF-ALPP.

BACKGROUND

The International Plant Protection Convention (IPPC, 1997) contains provisions for areas of low pest prevalence (ALPPs), as does the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (WTO-SPS Agreement). ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*) describes different types of ALPPs and provides general guidance on the establishment of ALPPs. ALPPs may also be used as part of a systems approach (ISPM No. 14: *The use of integrated measures in a systems approach for pest risk management*).

Fruit flies are a very important group of pests for many countries because of their potential to cause damage to fruits and restrict access to international markets for plant products that can host fruit flies. The high probability of introduction of fruit flies associated with a wide range of hosts results in restrictions imposed by many importing countries and the need for exporting countries to apply phytosanitary risk management measures to ensure that the risk of introduction is appropriately mitigated.

This standard provides guidance for the establishment and management by the NPPO or competent authority for FF-

ALPPs with the aim to facilitate trade by minimising the spread of regulated fruit flies from a defined area.

An FF-ALPP may be established in an area of low pest prevalence, whether this occurs naturally or as a result of management practices that reduce the number of fruit flies in the area to a low level. This may be a buffer zone protecting an FF-PFA, fruit fly free places of production or fruit fly free production sites. It may also occur as a result of crop production systems that suppress the population of fruit flies in an area to limit their impact on the crop. FF-ALPPs may also develop during official fruit fly suppression or eradication programmes.

The decision to establish an FF-ALPP may be closely linked to market access as well as to economic and operational feasibility.

REQUIREMENTS

1. General Requirements

The concepts and provisions of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*) apply to the establishment and maintenance of areas for all pests including fruit flies, and therefore it should be referred to in conjunction with this standard.

An FF-ALPP may be established in accordance with this ISPM under a variety of different situations. Some of them require the application of the full range of elements provided by this standard, others require the application of only some of those elements.

Phytosanitary measures and specific procedures as further described in this standard may be required for the establishment and maintenance of an FF-ALPP by the NPPO. The decision to establish an official FF-ALPP may be based on all or some of the technical factors provided in this standard, as appropriate. They include necessary components such as pest biology and control methods, which will vary according to the species of fruit fly for which the FF-ALPP is being established.

The determination to establish an official FF-ALPP should be considered against the overall operational and economic feasibility of establishing a programme to meet and maintain the low pest level and the objectives for which the FF-ALPP is established. The parameters for establishment and maintenance of the FF-ALPP may need to be confirmed through bilateral negotiations with an importing country if the area is to be considered as a phytosanitary risk management measure, either alone or as part of a systems approach.

An FF-ALPP may be applied to facilitate the movement of fruit fly host products from one FF-ALPP to another of the same fruit fly pest status within the same country, or as a part of a system to protect areas endangered by a regulated fruit fly pest.

The essential prerequisite for establishment of an FF-ALPP is an area that exists naturally, or that can be established, and that can be delimited, monitored and verified by the NPPO to be of a known fruit fly prevalence level. The area may be in place to protect a PFA or support sustainable crop production, or may have developed in response to suppression or eradication actions. It may occur naturally as a result of climatic, biological or geographic factors that reduce or limit the fruit fly population through all or part of a year.

An area can be defined as an FF-ALPP for one or more target fruit fly species. However, for an FF-ALPP covering multiple target fruit fly species, trapping devices and their deployment densities and locations should be specified and low pest prevalence levels determined for each target fruit fly species.

The successful establishment and maintenance of FF-ALPPs is greatly assisted by the support and participation of the public, especially the local community in close proximity to the FF-ALPP. The support of individuals who travel to or through the area, including parties with direct and indirect interest, are also critical to the success of the FF-ALPP. Further details on these aspects are given in section 1.1 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

1.1 Operational plans

In most cases, an official operational plan is needed to specify the required phytosanitary procedures to establish and maintain an FF-ALPP.

An operational plan for an FF-ALPP should describe the main procedures to be carried out such as surveillance activities, procedures to maintain the specified level of low pest prevalence, the corrective action plan and any other procedures that are required to achieve the objective of the FF-ALPP.

1.2 Determination of an FF-ALPP

Elements for consideration for the determination of an FF-ALPP are outlined in section 2.1 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

The following elements should also be considered for the determination of an FF-ALPP:

- delimitation of the area (extension, detailed maps including an accurate description of the boundaries or GPS coordinates showing the boundaries, natural barriers, entry points and host area locations, urban areas)
- target fruit fly species and its seasonal and spatial distribution within the area
- location and abundance of primary (biologically preferred) and secondary (biologically non-preferred) hosts
- climatic characterization, for example rainfall, relative humidity, temperature, prevailing wind speed and direction
- determination of host status of commodities to be exported from the ALPP.

In areas where prevalence of fruit flies is naturally at a low level because of climatic, geographical or other reasons (e.g. natural enemies, secondary hosts), the target fruit fly population may already be below the specified level of low pest prevalence without applying any control measures. In such cases, surveillance should be undertaken to validate the low prevalence status and may be recognized in accordance with the examples listed in section 3.1.1 of ISPM No. 8 (*Determination of pest status in an area*). If, however, the fruit flies are detected above the specified level of low pest prevalence (for example, because of extraordinary climatic conditions or other reasons) corrective actions must be applied.

1.3 Documentation and record keeping

The phytosanitary procedures used for the determination, establishment, verification and maintenance of an FF-ALPP should be adequately documented. They should be reviewed and updated regularly, including corrective actions if required (as described in ISPM No. 22: *Requirements for the establishment of areas of low pest prevalence)*. It is recommended that a manual of procedures relating to the operational plan is prepared for the FF-ALPP.

For determination and establishment, documentation may include:

- list of hosts known to occur in the area, including description of host fruit production in area
- delimitation records: (a) detailed maps showing the boundaries, natural barriers (if present) and entry points; (b) description of agro-ecological features such as the location of main host areas, marginal host areas and urban areas; and (c) meteorological conditions
- surveillance records: types of surveys, number and type of traps and lures, frequency of trap inspection, trap density, trap array, type, amount, date and frequency of fruit sampled, number of target fruit flies captured by species for each trap
- record of control measures used: type(s) and locations.

For verification and maintenance, documentation should include the data recorded to demonstrate the population levels of the target fruit fly species. The records of surveys and results of other operational procedures should be retained for at least 24 months. If the FF-ALPP is being used for export purposes, records should be made available to the NPPO of the importing country on request.

1.4 Supervision activities

The FF-ALPP programme, including regulatory control, surveillance procedures (e.g. trapping, fruit sampling) and corrective action planning, should comply with officially approved procedures. Such procedures may include official delegation of responsibility assigned to key personnel, for example:

- a person with defined authority and responsibility to ensure that the systems/procedures are implemented and maintained appropriately
- entomologist(s) with responsibility for the authoritative identification of fruit flies to species level.

The NPPO should evaluate or audit the operation of the procedures for establishment and maintenance of the FF-ALPP to ensure that effective management is maintained even where the responsibility to carry out specific activities has been delegated to outside the NPPO. Critical control points in which results should be monitored and processes actively managed include:

- operation of surveillance procedures
- surveillance capability
- trapping materials (traps, attractants) and procedures
- identification capability
- application of control measures
- documentation
- implementation of corrective actions, where applied.

2. Specific Requirements

2.1 Establishment of the FF-ALPP

Elements for consideration when establishing an FF-ALPP are described in section 2.1 and 2.2 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

The following should be developed and implemented:

- determination of the specified level of low pest prevalence
- surveillance system to validate low pest prevalence status
- trapping materials (traps, attractants) and procedures where applicable
- reduction of the risk of entry of the target fruit fly species
- domestic declaration of low pest prevalence.

2.1.1 Determination of the specified level of low pest prevalence

Specified levels of low pest prevalence will depend on the level of risk associated with the target fruit fly species–host–area interaction. These levels should be established by the NPPO of the country where the FF-ALPP is located with sufficient precision to allow assessment of whether surveillance data and protocols are adequate to determine that pest prevalence is below these levels. Establishment of the parameters used to estimate the level of fruit fly prevalence is described in Annex 1.

If an FF-ALPP is established for export of host fruit, the specified level of low pest prevalence should be established in conjunction with the importing country taking into account factors and elements previously mentioned.

2.1.2 Geographic description

The NPPO defines the limits of a proposed FF-ALPP. Isolation (physical or geographic) is not necessarily required for establishment of FF-ALPP.

Boundaries used to describe the delimitation of the FF-ALPP should be established and closely related to the relative presence of primary hosts of the target fruit flies or adjusted to readily recognizable boundaries.

2.1.3 Documentation and verification

The NPPO should verify and document all procedures implemented, elements of which are described in ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

2.1.4 Surveillance activities prior to establishment

Prior to the establishment of an FF-ALPP, surveillance to assess the presence and abundance of the target fruit fly species should be undertaken for a period determined by its biology, behaviour, climatic characteristics of the area, host availability and as technically appropriate for at least 12 consecutive months.

2.2 Phytosanitary procedures

2.2.1 Surveillance activities

Surveillance systems based on traps are similar in any type of fruit fly prevalence area. The surveillance used in an FF-ALPP may include those processes described in ISPM No. 6 (*Guidelines for surveillance*), section 2.2.2.1 on trapping procedures of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*), and any other relevant scientific information.

Fruit sampling as a routine surveillance method is not widely used for monitoring fruit flies in low prevalence areas except in areas where sterile insect technique (SIT) is applied, where it may be a major tool.

In some cases, the NPPO may complement trapping with fruit sampling for fruit fly surveillance and/or monitoring. However, fruit sampling will not provide sufficient accuracy for describing the size of the population and should not be solely relied on to validate or verify the FF-ALPP status. Surveillance procedures may include those described in section 2.2.2.2 on fruit sampling procedures of ISPM No. 26: (*Establishment of pest free areas for fruit flies (Tephritidae)*).

The presence and abundance of fruit fly hosts should be recorded separately identifying commercial and major non-commercial hosts. This information will help in planning the trapping and host sampling activities and may help in anticipating the potential ease or difficulty of defining and maintaining the phytosanitary status of the area.

The NPPO should have identification capabilities or have access to suitable specialists for the target fruit fly species detected during the surveys (whether adult or larvae). This capability should also exist for the ongoing verification of FF-ALPP status.

2.2.2 Reduction and maintenance of the level of target fruit fly populations

Specific control measures may be applied to reduce fruit fly populations to or below the specified level of low pest prevalence. Suppression of fruit fly populations may involve the use of more than one control option. Since the target fruit fly species are permanently present in the area, preventive and/or sustainable control measures to maintain fruit fly populations at or below the specified level of low pest prevalence are necessary. Efforts should be made to select those measures with least environmental impact.

Suppression of fruit fly populations may involve the use of more than one control option described in section 3.1.4.2 of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

Available methods may include:

- chemical control (e.g. selective insecticide bait, aerial and ground spraying, bait stations and male annihilation technique)
- physical control (e.g. fruit bagging, fruit stripping)
- biological control (e.g. natural enemies, SIT)
- cultural control (e.g. destruction of mature and fallen fruit, replacement of host plants by non-host plants, early harvesting, discouraging intercropping with fruit fly host plants, pruning before the fruiting period, removal of shade trees, removal of untreated non-commercial hosts).

2.2.3 Reduction of the risk of entry of the target fruit fly species

Phytosanitary measures may be required to reduce the risk of entry of the specified pests into the FF-ALPP. These are outlined in Section 3.1.4.3 of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

2.2.4 Domestic declaration of low pest prevalence

The NPPO should verify the FF-ALPP status of the area (in accordance with ISPM No. 8: *Determination of pest status in an area*) specifically by confirming compliance with the procedures set up in accordance with this standard (surveillance and controls). The NPPO should declare and notify the establishment of the FF-ALPP, as appropriate.

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

2.3 Maintenance of the FF-ALPP

Once an FF-ALPP is established, the NPPO should maintain the established documentation and verification procedures (auditable), and continue to follow phytosanitary procedures and movement controls, and keep records.

2.3.1 Surveillance

In order to maintain the FF-ALPP status, the NPPO must continue surveillance, as described in section 2.1.2.

2.3.2 Measures to maintain specified levels of target fruit fly populations

In most cases the control measures as identified in section 2.2.2 may need to be applied to maintain the FF-ALPP, since the target fruit flies are still present in the established area.

If the monitored fruit fly level is observed to be increasing (but remains below the specified level for the area) a threshold for action established by the NPPO may be reached. At this point the NPPO may require implementation of additional control measures (e.g. as described in section 3.1.4.2 of ISPM No. 22: *Requirements for the establishment of areas of low pest prevalence*). This threshold should be set to provide adequate warning of potentially exceeding the specified level of low pest prevalence and avert suspension.

If additional measures are required to prevent the entrance of other target fruit fly species into the FF-ALPP, options to strengthen procedures include:

- physical and biological barriers, such as elimination of host plants that fruit at the same time as the host commodity around the FF-ALPP
- perimeter trap-hosts
- elimination of other primary or secondary hosts around the FF-ALPP
- reduction in the number of trees that provide shelter to fruit flies around the FF-ALPP.

2.4 Corrective action plans

A corrective action plan for the FF-ALPP should be applied by the NPPO when the population level of the target fruit fly exceeds the specified level of low pest prevalence. The corrective action plan should be based on the measures described in Annex 2.

2.5 Suspension, loss and reinstatement of FF-ALPP status

2.5.1 Suspension of FF-ALPP status

If the specified pest level of the target fruit fly species is exceeded **either** throughout the whole FF-ALPP area or within a sector **of** the FF-ALPP, **the entire FF-ALPP** is normally suspended. However, where the affected area within the FF-ALPP can be identified and clearly delimited, then the FF-ALPP may be redefined to suspend only that area. When such a suspension is put in place, the criteria for lifting the suspension and restoring the original FF-ALPP status should be made clear. Importing NPPOs should be notified of these actions (further information on pest reporting requirements is provided in ISPM No. 17: *Pest reporting*).

Suspension may also apply if faults in the procedures are found (for example inadequate trapping or pest control measures).

If an FF-ALPP is suspended, an investigation by the NPPO should be initiated to determine the cause of the failure.

2.5.2 Loss of FF-ALPP status

Loss of FF-ALPP status should occur if the specified level of low pest prevalence of the target fruit fly species has been exceeded and after the application of corrective actions that level cannot be achieved again, or if critical failures in the procedures occur and the integrity of the system is unlikely to be restored. Importing NPPOs should be notified of any change in status (further information on pest reporting requirements is provided in ISPM No. 17: *Pest reporting*).

In order to achieve FF-ALPP status again, the procedures for establishment and maintenance outlined in this standard should be followed, taking into account all background information related to the area.

2.5.3 Reinstatement

Reinstatement of FF-ALPP status may take place when:

- the population level no longer exceeds the specified level of low pest prevalence and this is maintained for a period determined by the biology of the species and the prevailing environmental conditions
- non-compliance to procedures has been corrected and verified.

Once technical conditions are achieved again, through the application of corrective actions contained in the plan, recognition of reinstatement should be carried out without undue delay.

ANNEX 1

PARAMETERS USED TO ESTIMATE THE LEVEL OF FRUIT FLY PREVALENCE[4]

Parameters used to determine the level of fruit fly prevalence in the FF-ALPP are defined by the NPPO. The most widely used parameter is the FTD (flies per trap per day). More precise spatial data may be presented on the basis of trap density (e.g. FTD per unit area) or temporally for each trap present in an area over time.

FTD values should be established in relation to the risk of infestation of the fruits that are intended to be protected by the FF-ALPP, and in relation to any specific related objectives of the ALPP (e.g. fruit-fly free commodities for export). In situations where a single FF-ALPP contains more than one host species (i.e. the ALPP is intended to protect mixed harvest objectives), the FTD value should be based on scientific information relating to the primary host of the fruit fly species, the risks of infestation, and comparative preferences of the target fruit fly species for the different hosts. However, in situations where the ALPP contains only one type of host, lower FTD values are usually established for the primary host(s) of the target fruit fly species for which the FF-ALPP is established and higher values for secondary hosts.

The biology of the target fruit flies (including number of generations per year, host range, host species present in the area, temperature thresholds, behaviour, reproduction and dispersion capacity) plays a major role in determining appropriate FTD levels. For FF-ALPP with several hosts present, the derived FTD level will need to reflect host diversity and abundance, host preference and host sequence for each target fruit fly species present. Although an FF-ALPP may have different FTD levels for each relevant target species, the level will remain fixed for the whole area and duration of the FF-ALPP operation.

The FTD is a population index used to estimate the average number of flies captured by one trap in one day. This parameter estimates the relative number of fruit fly adults in a given time and space. It provides baseline information to compare fruit fly populations among different places and/or times.

The FTD value is the result of dividing the total number of captured flies by the product obtained from multiplying the total number of inspected traps by the average number of days the traps were exposed. The formula is as follows:

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

Where
F = total number of flies captured
T = number of inspected traps
D = average number of days traps were exposed in the field.

In cases where traps are regularly inspected on a weekly basis, or longer in the case of winter surveillance operations, the parameter may be “flies per trap per week” (FTW). It estimates the number of flies captured by one trap in one week. Thus, FTD can be obtained from FTW by dividing by 7.

Efficiency of the types of traps and attractants used to estimate the levels of the pest population and the procedures applied for servicing the traps should be taken into consideration. The rationale is that different trap efficiencies could lead to different FTD values at the same location for a given population, so they have a significant effect in measuring the prevalence level of the target fruit fly species. Thus, when specifying the level of low pest prevalence accepted in terms of an FTD value, the corresponding trapping system should be stated as well.

Once an FTD has been derived for a given situation using a specific lure/attractant, the lure/attractant used in the FF-ALPP must not be changed or modified until an appropriate FTD is derived for the new formulation. For FF-ALPPs with multiple target fruit fly species present that are attracted to different lures/attractants, trap placement should take into consideration possible interactive effects between lures/attractants.

Fruit sampling can be used as a complementary surveillance method to trapping to assess the profile of the fruit fly population levels.

However, fruit sampling will not provide sufficient accuracy for describing the size of the population and should not be solely relied on to validate or verify the FF-ALPP status.

[4] This annex is an official part of the standard.

ANNEX 2

GUIDELINES ON CORRECTIVE ACTION PLANS FOR FRUIT FLIES IN AN FF-ALPP[5]

The detection of a population level higher than the specified level of low pest prevalence of the target fruit fly species in the FF-ALPP should trigger a corrective action plan. The objective of the corrective action plan is to ensure suppression of the fruit fly to below the specified level for low pest prevalence as soon as possible. It is the responsibility of the NPPO to ensure that appropriate corrective action plans are developed.

The corrective action plan should be prepared taking into account the biology of the target fruit fly species, the geography of the FF-ALPP, climatic conditions, phenology and host distribution within the area, time of year and extent to which the population level exceeded the specified level of low pest prevalence.

The elements required for implementation of a corrective action plan include:
- declaration of loss of status
- legal framework under which the corrective action plan can be applied
- time scales for the initial response and follow-up activities
- delimiting survey (trapping and fruit sampling), and application of the suppression actions
- identification capability
- availability of sufficient operational resources
- effective communication within the NPPO and with the NPPO(s) of the relevant importing country(s), including provision of contact details of all parties involved
- a detailed map and definition of the suspension area.

Application of the corrective action plan

1. Notice to implement corrective actions

The NPPO notifies interested stakeholders and parties, when initiating the application of a corrective action plan. The NPPO, or an NPPO-nominated agency, is responsible for supervising the implementation of corrective measures after the declaration of loss of status.

2. Determination of the phytosanitary status

Immediately after detecting a population level higher than the specified level of low pest prevalence, a delimiting survey (which may include the deployment of additional traps, fruit sampling of primary host fruits and increased trap inspection frequency) should be implemented to determine the size of the affected area and more precisely gauge the level of the fruit fly prevalence.

3. Suspension of FF-ALPP status

If the specified level of low pest prevalence of the target fruit fly species is exceeded, the FF-ALPP status should be suspended as stated in 2.4.1.

4. Implementation of control measures in the affected area

Specific suppression actions should immediately be implemented in the affected area(s). Available methods include:
- selective insecticide-bait treatments (aerial and/or ground spraying and bait stations)
- sterile fly release
- male annihilation technique
- collection and destruction of affected fruit
- stripping and destruction of primary host fruits, if possible
- insecticide treatments (ground, cover).

5. Notification of relevant agencies

Relevant NPPOs and other agencies should be kept informed of corrective actions. Information on pest reporting requirements under the IPPC is provided in ISPM No. 17 (*Pest reporting*).

[5] This annex is an official part of the standard.

APPENDIX 1

GUIDELINES ON TRAPPING PROCEDURES[6]

Information about trapping is available in the following publication of the International Atomic Energy Agency (IAEA): *Trapping Guidelines for area-wide fruit fly programmes*, IAEA/FAO-TG/FFP, 2003. IAEA, Vienna.

This publication is widely available, easily accessible and generally recognized as authoritative.

[6] This appendix is for reference purposes only and is not a prescriptive part of the standard.

APPENDIX 2

TYPICAL APPLICATIONS OF AREAS OF LOW PEST PREVALENCE FOR FRUIT FLIES[7]

FF-ALPPs are generally used:

- as a buffer zone for FF-PFAs, fruit fly free places of production or fruit fly free production sites (either as a permanent buffer zone or as part of an eradication process)
- for export purposes, usually in conjunction with other risk mitigation measures as a component of a systems approach (this may include all or part of an FF-ALPP that acts as a buffer zone).

1 An FF-ALPP as a buffer zone

In cases where the biology of the target fruit fly species is such that it is likely to disperse from an infested area into a protected area, it may be necessary to define a buffer zone with a low fruit fly prevalence (as described in ISPM No. 26: *Establishment of pest free areas for fruit flies (Tephritidae)*). These FF-ALPPs are usually established at the same time as establishing the FF-PFA and may be subsequently redefined to improve protection of the FF-PFA.

1.1 Determination of an FF-ALPP as a buffer zone

Determination procedures may include those listed in section 1.1[8]. In addition, in delimiting the buffer zone, detailed maps may be included showing the boundaries of the area to be protected, location of major host areas, location of urban areas, entry points and control checkpoints. It is also relevant to include data related to natural biogeographical features such as prevalence of other primary or secondary hosts, climate, location of valleys, plains, deserts, rivers, lakes and sea, and those areas that function as natural barriers. The size of the buffer zone in relation to the size of the area being protected will depend on the biology of the target fruit fly species (including behaviour, reproduction and dispersal capacity), the intrinsic characteristics of the protected area, and the economic and operational feasibility of establishing the FF-ALPP.

1.2 Establishment of an FF-ALPP as a buffer zone

The establishment procedures are described in section 2.1. The movement of relevant fruit fly host commodities into the area may need to be regulated. Additional information can be found in section 2.2.3 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

1.3 Maintenance of an FF-ALPP as a buffer zone

Procedures include those listed in section 2.3. Since the buffer zone has features similar to the area or place of production it protects, procedures for maintenance may include those listed for the FF-PFA as described in section 2.3 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*) and sections 3.1.4.2, 3.1.4.3 and 3.1.4.4 of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

2 FF-ALPPs for export purposes

FF-ALPPs may be used to facilitate fruit exports from the area. In most cases the FF-ALPP is the main component of a systems approach as a pest risk mitigation measure. Examples of measures and/or factors used in conjunction with FF-ALPPs include:

- pre- and (less than probit 9) post-harvest treatments
- poor hosts, less attractive hosts or non-hosts
- export of host material to areas not at risk during particular seasons
- physical barriers (e.g. pre-harvest bagging, insect-proof structures).

2.1 Determination of an FF-ALPP for export purposes

Determining procedures may include those listed in section 1.2. In addition, the following elements should be considered for the determination of an FF-ALPP:

- a list of products (hosts) of interest
- a list of other commercial and non-commercial hosts of the target fruit fly species present but not intended for export and their level of occurrence, as appropriate
- additional information such as any historical records in connection with biology, occurrence and control of the target fruit fly species or any other fruit fly species that may be present in the FF-ALPP.

2.2 Maintenance of an FF-ALPP for export purposes

Maintenance procedures may include those listed in section 2.3 Surveillance and control measures should be applied while hosts are available. If appropriate, surveillance may continue at a lower frequency during the off-season period. This will depend on the biology of the target fruit fly species and its relationship with hosts present during the off-season period.

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[7] This appendix is not an official part of the standard. It is provided for information only.

[8] Unless other ISPMs are specified, section numbers refer to the preceding text of this standard.

SPECIFICATION NO. 43

Title: The movement of soil and growing media in association with plants in international trade.

Reason for the standard: Soil and growing media are recognized internationally as high risk pathways for the introduction of regulated pests. Despite this, it is difficult to totally avoid the movement of soil or growing media associated with plants. In cases where plants are cleaned, e.g. with deciduous plants for transplanting, it is not practically possible to remove all soil. In other cases, trees/plants of special interest should retain and be transported with their growing medium. There is a need for guidelines to recommend measures to avoid/minimize the risk of introduction of pests with such movement of soil and/or growing media attached to plants and planting material. It was approved in ICPM–7 as normal priority of topics and priority for standards.

Scope and purpose: This standard will provide guidance for the evaluation of risks associated with soil and growing media and describe phytosanitary measures to manage the pest risks of soil attached to imported plants in the country of origin and on arrival.

Tasks: The expert drafting group should:

1. Identify risks of soil and growing media that accompany plants in international trade taking into account the soil and growing media types and conditions.
2. Identify potential phytosanitary import requirements for soil and growing media in association with plants to prevent the introduction of regulated pests associated with the soil and growing media.
4. Produce an indicative appendix of most commonly listed pests that can accompany soil and growing media.
5. Determine the characteristics of specific types of growing media or production methods that prevent or limit the transfer of pests.
6. Consider whether guidelines for recommended tolerance limits for quantities of soil remaining with root systems of plants in international trade could be provided; for example, an indication could be provided of how much the pest risk increases with the quantity of soil present.
7. Describe the process of corrective action in case of non compliance.
8. Give a definition for “soil”.

Provision of resources: Funding for the meeting is provided by the IPPC Secretariat (FAO). As recommended by ICPM-2 (1999), whenever possible, those participating in standard setting activities voluntarily fund their travel and subsistence to attend meetings. Participants may request financial assistance, with the understanding that resources are limited and the priority for financial assistance is given to developing country participants.

Steward: Mohammad Katbeh Bader (Jordan)

Collaborator: To be determined.

Expertise: Experts having practical experience in different disciplines of soil borne pests, invasive plant species, horticulture. Expertise in phytosanitary issues, developing phytosanitary measures for import of soil in relation with plants and the standard setting procedure of the IPPC are also desirable.

Participants: To be determined.

Approval: Introduced into the work programme by ICPM-7 (2005). Specification approved by the Standards Committee in May 2007.

References: NAPPO position on soil movement (2003).

Discussion papers: Participants and interested parties are encouraged to submit discussion papers to the IPPC Secretariat (ippc@fao.org) for consideration by the expert drafting group.

SPECIFICATION NO. 44

Title: Pest risk analysis for plants as quarantine pests.

Reason for the standard: The movement of plants in international trade, for growing, is increasing as opportunities for international trade have increased. This has resulted in the potential for increased movement of plants as pests. Additionally, there is an increased awareness of the potential pest risks associated with this movement. This has resulted in the need for the development of guidance on determining the pest potential of a plant proposed for importation into the territory of a country or otherwise into an area where it is not yet present.

Scope and purpose: This standard will provide guidance to NPPOs in determining the pest potential of a plant, proposed for movement into an area where it is not yet present, to be regulated as a quarantine pest and other steps of a PRA, if appropriate. The scope does not include contaminating pests (e.g. weed seeds in bulk seed consignments).

Tasks: The expert working group should:

1. Provide, in the form of a new annex and, if appropriate, new supplemental text for the body of ISPM No. 11 (*Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms*), and provide guidance on how to determine the pest risk associated with a plant proposed for movement into an area where it is not yet present (for example, through international trade).
2. Examine and provide descriptions of any relevant unique risk assessment tools being utilised to determine the pest potential of plants moving in international trade that are not yet present in the territory of the importing country or regulating movement within a country.
3. Identify desirable information requirements for determining the potential of a plant to be a pest, including:
   - key characteristics (for example, ecological, biological, botanical, etc.) that may enhance the potential of a plant to become a pest
   - the relevance of historical information on the pest status of a plant species introduced into a similar environment in determining the pest potential of a plant.
4. Discuss and provide as necessary any appropriate guidance for the further steps in the PRA process.

Provision of resources: Funding for the meeting is provided by the IPPC Secretariat (FAO). As recommended by ICPM-2 (1999), whenever possible, those participating in standard setting activities voluntarily fund their travel and subsistence to attend meetings. Participants may request financial assistance, with the understanding that resources are limited and the priority for financial assistance is given to developing country participants.

Steward: David Porritt (Australia).

Collaborator: To be determined.

Expertise: A working group of 5-8 phytosanitary and/or plant pest (weed/invasive alien plants) experts.

Participants: To be determined.

Approval: Introduced into the work program by ICPM-7 (2005). Specification approved by the Standards Committee in May 2007.

References: ISPMs No. 2 and 11 (and other relevant ISPMs), Convention on Biological Diversity, Australia's Weed Risk Assessment tool, Procedures for weed risk assessment (FAO), others to be determined.

Discussion papers: Participants and interested parties are encouraged to submit discussion papers to the IPPC Secretariat (ippc@fao.org) for consideration by the expert drafting group.

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FAO Headquarters, Rome, Italy

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