



REPORT

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Technical Panel on Phytosanitary Treatments September, 2016



Food and Agriculture Organization of the United Nation

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1. Opening of the meeting

Opening Remarks by the Host Agency

- [1] The Director of the Plant Protection Division, Food Safety and Consumers Affairs Bureau of the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF), Mr Kazuhiko SHIMADA, welcomed the participants to Tokyo. He expressed condolences for the losses in the Italian region Umbria due to the earthquake occurring on 24 August 2016. He thanked the members of the TPPT for their important work in helping to harmonize standards on such a vital issue as phytosanitary treatments (PTs) that help facilitate international trade while protection the world's plant resources.
- [2] The International Plant Protection Convention (IPPC) Secretariat (hereafter "Secretariat") thanked MAFF for hosting the meeting and welcomed the participants. In addition, the Secretariat thanked Japan for also providing financial resources to support this meeting and the work of the Technical Panel on Phytosanitary Treatments (TPPT). The Secretariat noted that two TPPT members were not able to attend and hoped to see the full TPPT membership in future meetings as not having all members in attendance hampers the work of the panel specially when panel members are also stewards.
- [3] The Secretariat reminded the TPPT of its mandate and responsibilities, emphasizing that the 182 IPPC contracting parties await the TPPT outcomes with great anticipation. The Secretariat informed the TPPT of the outcomes of the interviews undertaken by the Secretariat with all the TPPT members in advance of the meeting to understand the challenges that the panel faces. One of the main points made by several TPPT members was the wish for the panel to be more decisive, and the Secretariat echoed this desire.
- [4] The TPPT Steward, Bart ROSSEL (Australia), expressed gratitude to the TPPT on behalf of the SC for the work that the TPPT members carry out, stressing the need to allocate sufficient time to the TPPT tasks throughout the year. He also referred to the TPPT specification and ISPM 28 (*Phytosanitary treatments for regulated pests*) that sets the requirements for the review of the treatments, stressing that it was crucial the TPPT members stay focused and progress the work.

Election of the Chairperson

- [5] The TPPT elected Mr Matthew SMYTH (Australia) as Chairperson.

Election of the Rapporteur

- [6] The TPPT elected Mr Michael ORMSBY (New Zealand) as Rapporteur.

Adoption of the Agenda

- [7] The TPPT reviewed and adopted the agenda (Appendix 1).

2. Administrative Matters

Documents List

- [8] The TPPT reviewed the documents list (Appendix 2). For ease of reference, a list of the papers mentioned throughout this report were added in in Appendix 3.

Participants List

- [9] The TPPT members reviewed their contact information (Appendix 4) and agreed to update it on the IPP.

Local Information

- [10] The meeting organizer, Ms Masumi YAMAMOTO, provided further information regarding the local arrangements and logistics¹.

3. Review of Draft Phytosanitary Treatments Considering Comments from the 2015 Consultation

- [11] The Secretariat recalled that compiled comments from the 2015 consultation on draft PTs are available on the International Phytosanitary Portal (IPP – www.ippc.int)². Once TPPT responses to comments have been approved by the SC they will be posted publicly on the same page of the IPP (superseding the compiled comments). The Secretariat will forward editorial comments to the IPPC scientific editor and translation comments to FAO translation-service.

3.1 Heat treatment of wood using dielectric heating (2007-114), priority 1

- [12] The Treatment lead, Mr Mike ORMSBY (New Zealand), introduced the documents, including supporting references by Dubey *et al.* (2016) and Tubajika *et al.* (2006)³, and the TPPT reviewed and revised the draft phytosanitary treatment (PT) and the proposed responses to the comments.
- [13] The following points were discussed based on the consultation comments:
- [14] **Whether to use “apply”, “describe” or “comprise” in the introductory sentence of PTs.** The TPPT noted that all three words had been used in the currently adopted PTs. Fourteen PTs, concerning irradiation, use “this treatment applies to...” whereas “describe” is used in five PTs and “comprise” in two. The TPPT agreed to use “describe” because this had been used often, because “apply” had not been recommended for use by the IPPC Editor (although used frequently) and because non-native English TPPT members noted that “comprise” was not easy to translate.
- [15] **Inclusion of an appendix to list target pests and references that were lost in the original ISPM 15.** The TPPT agreed that as this draft PT was for wood generally, and not only wood packaging material, any such specific reference would not be appropriate.
- [16] **Whether to remove fungi from the list of target pests.** The TPPT discussed the effectiveness of heat against fungal pests as some consultation comments had suggested excluding fungi from the treatment or adding additional references to support the inclusion.
- [17] Some TPPT members argued to retain fungal pests, noting that literature indicated effectiveness against fungal pests. It was also stressed that probit 9 could not easily be calculated for fungi and that the stated level of efficacy therefore may be lower than that normally required in PTs, while still achieving the objective of limiting introduction and spread of the pest. They also pointed out that there are few examples of fungal pests being vectored by wood into new environments. Many fungi will only remain viable while the wood is green. Fungi development will cease when the wood dries out, therefore presenting a low pest risk. Lastly, they advocated for the continued inclusion of fungi as countries could otherwise feel the need to carry out multiple treatments on the same commodity to target the different pests, which would very likely be unnecessary.
- [18] Other TPPT members were concerned that the treatment would not be effective against all fungal pests as some are known to be very heat tolerant. They pointed out that the treatment did not state a level of efficacy for fungal pests, whereas, normally, the efficacy would always need to be included in a PT. They also felt that while the pest risk of fungi on wood was generally low, and the treatment reduced the fungal population in the wood, additional research on efficacy levels and the impact on fungal

¹ 04_TPPT_2015_Sep

² Link to 2015 compiled comments: <https://www.ippc.int/en/core-activities/standards-setting/substantial-concerns-commenting-period-sccp-draft-ispm/>

³ 2007-114; 22_TPPT_2016_Sep; 24_TPPT_2016_Sep; 36_TPPT_2016_Sep; 42_TPPT_2016_Sep

phytosanitary risk should be sought before including it. The TPPT re-examined the underlying data and found that there was not enough evidence to support the inclusion of fungi in the treatment schedule at this time.

- [19] Therefore, the TPPT agreed to exclude fungal pests from the schedule but included additional clarification in the section “other relevant information” to stress that evidence exists to support the specific treatment against fungi.
- [20] **Extrapolation of data.** Spurred by the consultation comment on fungi, the TPPT discussed more generally extrapolation of data for some species to all within a family, because the treatment, as described, was applicable to all nematodes and insects and did not specify the species. The TPPT recognized that no comment had suggested to specify the species, but still felt it was important to look at this extrapolation issue.
- [21] The TPPT recalled that for the general irradiation treatment for fruit flies of the family Tephritidae (PT 7), the TPPT had extrapolated data from experiments on several Tephritid fruit flies of economic importance to the whole family. In the specific case, the TPPT had extrapolated because they had sufficient confidence in the data as no survivors had been detected in many other trials on economically important fruit fly species.
- [22] With this in mind, the TPPT noted that only *Bursaphelenchus xylophilus* (pine wood nematode) had been tested for this treatment, and discussed if the data could be extrapolated to all nematodes. It was noted that there were few other nematodes of phytosanitary importance found in wood. The TPPT found that the data was not sufficient to support extrapolation because there were other nematode species that had yet to be tested, and therefore restricted the scope to *Bursaphelenchus xylophilus*. Given the lack of data about other nematode species of economic importance in wood, this restriction was not expected to greatly diminish the applicability or versatility of the treatment.
- [23] As to insects, the TPPT noted that insects in general are less heat tolerant than nematodes thus the treatment would be effective against most insects. The TPPT also pointed out that dielectric heating targets the moisture of the commodity and therefore the insects inside the commodity would be heated to temperatures above those measurable in the wood. Based on this, the TPPT concluded that the data supporting the treatment schedule could be extrapolated to being effective for killing all wood-infesting insect pests.
- [24] **Whether to add operational guidance.** The TPPT recognized that guidance on where to place temperature sensors and on temperature calibrations was helpful, but felt that it would be inconsistent to add this to the PT. This type of guidance would be included in the draft ISPM on *Requirements for temperature treatments as a phytosanitary measure* (2014-005).
- [25] **Implementation issues.** One consultation comment suggested that dielectric heating was costly with limited capacity, thus an implementation challenge. The TPPT recognized that, at the moment, the treatment is not the most inexpensive treatment available however, microwave treatments for wood and in particular for wood packaging material are provided commercially, and that the PT would provide for alternative treatment options. Dielectric heating may become less costly in the future and several countries already use the treatment. The TPPT therefore did not believe this potential implementation issue should prevent the adoption of the PT.
- [26] **Whether to include “(including the surface)” to clarify that the profile of the wood includes also the surface.** The TPPT considered that this inclusion was not strictly needed as the surface would be understood as included in the term “profile”. However, the TPPT agreed that the additional text could aid interpretation and noted that it would be consistent with the revised annex 1 of ISPM 15 (*Regulation of wood packaging material in international trade*). Therefore, the TPPT added the text.
- [27] **Whether to add a time range after heating to allow heat diffusion.** The TPPT felt that it would not be possible to add a time range within which to allow heat diffusion as this would depend on a number of factors (e.g. commodity or facility). In addition, this was considered an operational issue and

therefore the details were not deemed appropriate in the PT. Nevertheless, the TPPT modified the paragraph for clarity.

[28] The TPPT:

- (1) *agreed* to submit the responses to comments from the 2015 consultation on the draft PT Heat treatment of wood using dielectric heating (2007-114) to the SC for approval.
- (2) *agreed* to recommend the draft PT Heat treatment of wood using dielectric heating (2007-114) as modified in this meeting to the SC for their consideration to recommend it to the CPM for adoption.
- (3) *requested* the Secretariat to update the annotated template for draft PTs with the guidance on “describe” provided in this section.
- (4) *invited* the SC to consider the implementation issues identified by the TPPT.

3.2 Sulfuryl fluoride fumigation treatment for insects in debarked wood (2007-101A), priority 1

[29] The Treatment lead, Mr Mike ORMSBY (New Zealand), introduced the documents⁴, and the TPPT reviewed and revised the draft PT and the proposed responses to the comments.

[30] The following points were discussed based on the consultation comments:

[31] **Whether the treatment was for three insects species only and not for insect pests in general.** The TPPT reiterated that published papers and the historical use of sulfuryl fluoride (SF) have demonstrated that this treatment practically eliminates insects of concern associated with wood in international trade. It was recalled that in the studies of concern for this treatment, no survivors had been detected at the given treatment schedule. However, one TPPT member pointed out that *Agrillus planipennis* (emerald ash borer) would perhaps need a higher minimum concentration-time (CT) product. Although this insect is bark borne and the treatment was for debarked wood, the TPPT did a literature review of publications since 2009, which was when the TPPT last reviewed the treatment data. Based on the updated literature review, the TPPT reconfirmed that there was no evidence to demonstrate that any insect pests would survive this treatment schedule (see e.g. Barak *et al.* (2010), Daojian *et al.* (2010)⁵).

[32] In this context, the TPPT also considered a consultation comment suggesting to add a footnote explaining the use of extrapolation, but felt that this was applicable to all PTs and ISPMs and therefore did not agree to include this explanation.

[33] **Whether to add a note stating that the PT does not target eggs.** The TPPT noted that the high dose rates required were to target the egg stage as the treatment efficacy had been demonstrated against insect eggs. The TPPT also noted that the removal of the bark layer would remove the eggs of many insects, but that some eggs are placed or laid in the wood below the bark layer and are therefore less likely to be removed (e.g. some wood borers, *Sirex*). The TPPT pointed out that the wood was “debarked” but not “bark free”, so some bark would remain and potentially contain eggs. Accordingly, the TPPT felt that it would not be beneficial adding the note (stating that the PT does not target eggs) as the note would not be accurate as the treatment was effective against all life stages.

[34] **Implementation issue in relation to phasing out of SF treatments.** The TPPT pointed out that several countries do use SF treatments and therefore did not agree that the phasing out of SF treatments in some countries should prevent the adoption of the PT.

[35] **Modify the “cross section” to include “radius”.** The TPPT noted that wood is often sawn into rectangular shapes and this makes it difficult to determine a suitable radius. The TPPT, therefore, did not agree to modify the text to include “radius”.

⁴ 2007-101A; 20_TPPT_2016_Sep; 25_TPPT_2016_Sep

⁵ 19_TPPT_2016_Sep

- [36] **Determination of moisture content.** The TPPT discussed the measurement of the moisture content because it seemed, from a consultation comment, that there was confusion as to the basis on which moisture was measured. The TPPT felt that, overall, the method of measuring moisture was an operational issue and did not pertain to the schedule, but agreed that it could be clarified in the PT on what basis (dry or wet) the moisture was measured. The TPPT noted that normally industry uses dry basis, but that the data underlying the treatment used wet basis and that if the basis was not specified, it could be misunderstood. Therefore, the TPPT decided, for clarity and to facilitate implementation of the treatment, to add “dry basis” and modified the percentage to 75%, which was the dry basis equivalent of the wet basis measurement provided in the supporting paper (Barak *et al.*, 2006).
- [37] **Definition of concentration-time (CT) calculation.** The TPPT discussed whether to include the definition of the CT calculation used, with additional provisions when the target CT product would not be achieved by the end of the treatment period. Some TPPT members considered that the CT calculation method was an operational issue that would require lengthy explanation due to the wide range of variations that exists. They felt this issue was analogue to that of dosimetry in an irradiation treatment, where dose mapping is not specified. The TPPT agreed that the CT calculation should rather be included in the draft ISPM on *Requirements for the use of fumigation as a phytosanitary measure* (2014-004). Nevertheless, in accordance with the proposed revision of Annex 1 to ISPM 15, the TPPT added a paragraph to the draft PT on the need for corrective action if the required CT was not achieved while still meeting the minimum concentration requirements.
- [38] **CT product and dosages.** One consultation comment pointed out that the CT product and dosage provided in the treatment were higher than that established in several of the references. The TPPT noted that the CT values were those provided by the submitting country to ensure the treatment would be generally effective against wood-borne insect pest. While lower doses were required for the three particular species for which efficacy values were provided, higher doses were required to ensure the treatment would achieve the stated objective, i.e. to be generally effective against wood-borne insect pests.
- [39] **Availability of supporting documentation.** The TPPT discussed the request in some consultation comments that all the documentation (calculations, CT schedules, TPPT meeting notes, etc.) supporting the TPPT decisions be made available publicly on the IPP. The TPPT noted that their meeting reports, including those from virtual meetings, were all posted publicly. Other supporting information is provided by the submitting countries and not always for public sharing. The TPPT suggested that the SC may wish to consider this request further, as it was felt to be outside the mandate of the TPPT.
- [40] **Clarifications to Table 2.** In response to a comment on why the concentrations were higher after 0.5 hour than at the starting time, the TPPT clarified that dosage is calculated on the total chamber volume yet the available atmosphere volume in the chamber is reduced by the volume of wood being fumigated. Therefore, the concentration of gas in the atmosphere will be higher than the dose rate until the gas has adequately penetrated into the wood (e.g. if the wood volume is 40% of the chamber then the concentration of the gas in the chamber will be initially 40% higher than the dose applied). In addition, the TPPT recalled that the table described an example of a treatment schedule and that other schedules could be used.
- [41] **Need for large-scale data.** The TPPT pointed out that large-scale confirmatory trials are not required according to ISPM 28 (section 3.2.2), and that the treatment therefore meets the ISPM 28 requirements in this regard.

[42] The TPPT:

- (5) *agreed* to submit the responses comments from the 2015 consultation on the draft PT Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A) to the SC for approval⁶.
- (6) *agreed* to recommend the draft PT Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.
- (7) *invited* the SC to consider the consultation comment requesting that all the documentation (calculations, CT schedules, etc.) supporting the TPPT decisions be made available publicly on the IPP.

3.3 Sulfuryl fluoride fumigation treatment for nematodes and insects in debarked wood (2007-101B), priority 1

[43] The Treatment lead, Mr Mike ORMSBY (New Zealand), introduced the documents⁷, and the TPPT reviewed and revised the draft PT and the proposed responses to the comments. The treatment lead noted that the discussions and conclusions in relation to this PT would impact the revision of Annex 1 and Annex 2 of ISPM 15 (2006-010A) in relation to the provisions relating to the Sulfuryl fluoride (SF) fumigation treatment (see also section 8.1 of this report).

[44] A number of discussions pertained to both PTs (2007-101A and 2007-101B) and are reported only under section 3.2, just as the TPPT modified this PT (2007-101B) for consistency with the modifications made to PT 2007-101A, where applicable (see section 3.2 of this report).

[45] **Restriction of the scope.** In accordance with the discussions on extrapolation under section 3.1 of this report and the discussions in section 3.2 on the efficacy against insect pests, the TPPT agreed that, regarding nematodes, the treatment schedule should only apply to *Bursaphelenchus xylophilus* (pine wood nematode) because the data was not sufficient to support extrapolation to other nematodes, and made textual changes to this effect.

[46] **Whether to exclude *Anobium punctatum* from this PT as included in 2007-101A.** The TPPT stressed that as the treatment targets insects, the insect pest *Anobium punctatum* would be included in the target pests, and thus did not agree to exclude this pest.

[47] **Treatment efficacy.** A number of consultation comments pointed out that the 24-hour SF fumigation appeared to be more efficacious at 15°C than at 20°C at comparable CT products (Sousa *et al.*, 2010). Furthermore, it seemed that 48-hour SF fumigations were generally more efficacious than 24-hour treatments conducted at 20 °C at similar CT values (Bonifacio *et al.*, 2013).

[48] The TPPT agreed that there were high levels of survival at 20 °C for 24 hours but pointed out that this was not case for 48 hours, which was the stated treatment. Regarding the few survivors recorded by Bonifacio *et al.* (2013) at 20 °C exposure for 48 hours, the TPPT noted that the efficacy still exceeded probit 9 at the recommended dose but, that the extremely high artificial infestation levels generated could result in survivors in spite of the high level of efficacy. Under normal trading conditions, the attained level of efficacy should ensure that there are no surviving nematodes in the treated wood packaging material.

[49] The TPPT noted that no nematodes were observed after 3 days whereas populations had formed and were detected after 21 days (Bonifacio *et al.* 2013). Testing for survivors after 21 days was required as the extraction technique (Baermann funnel technique) was not sufficiently sensitive to detect very low populations of the nematode in the wood. As noted above, nonetheless, given the extremely high artificial infestation levels in the exposed wood, the presence of very low numbers of survivors was

⁶ Once TPPT responses to comments have been approved by the SC they will be posted publicly on the IPP: <https://www.ippc.int/en/core-activities/standards-setting/substantial-concerns-commenting-period-sccp-draft-ispms/>

⁷ 2007-101B; 21_TPPT_2016_Sep; 26_TPPT_2016_Sep

considered acceptable as under normal trading conditions, the attained level of efficacy should ensure that there are no surviving nematodes in the treated wood packaging material.

- [50] On the question of the need for further studies, the TPPT pointed out that this would be the case for many phytosanitary treatments used in international trade, i.e. to better understand how the pest is responding to the treatment under different environmental conditions (e.g. different hosts, temperatures, moisture content, atmospheric conditions (CO₂/O₂ levels) etc.). However, the TPPT stressed that the evidence available for this treatment was sufficient to provide confidence that the treatment is effective.
- [51] The comments also noted that the effect of SF on fungi and nematode was poor, and that this part of the treatment lacked supporting experimental data. The TPPT pointed out that the specific treatment did not target fungi, and that there was efficacy data supporting the treatment for pine wood nematode.
- [52] As to the examples given in a consultation comment of intercepted pine wood nematode treated with Methyl bromide, the TPPT believed that this could have been due to poor treatment practices or post-treatment infestation, and thus that this was a non-compliance issue that would not necessarily indicate an inappropriate treatment schedule. The TPPT also stressed that the operational issues raised were based on a Methyl bromide treatment and therefore did not reflect the proposed SF treatment schedule.
- [53] The TPPT agreed to add an additional reference to the draft PT to substantiate the treatment.
- [54] **Temperature measurements of the commodity and implementation issues related to this.** The TPPT confirmed that the requirement that the core temperature of the commodity should also meet the required minimum temperature of the treatment is normal for fumigation treatments. The TPPT did not find there were operational difficulties in ensuring the core temperature is above the minimum and agreed that the requirement was consistent with other fumigant schedules.
- [55] **Moisture content.** In responding to a consultation comment regarding the operational aspects of measuring moisture content, the TPPT agreed to modify the schedule in accordance with the modification made for 2007-101A to 75% and to add “dry basis” to the text, at this should clarify how to measure the moisture.
- [56] Another consultation comment raised concerns about the high moisture content needed for the treatment, suggesting that it be lowered. However, the TPPT confirmed that the moisture content was tested in the study. The TPPT felt that the additional clarification as to the moisture content being measured on dry basis would also address this concern.
- [57] The TPPT:
 - (8) *agreed* to submit the responses to comments from the 2015 consultation on the draft PT Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B) to the SC for approval⁸.
 - (9) *agreed* to recommend the draft PT Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B), as modified in this meeting to the SC for their consideration to recommend it to the CPM for adoption.

3.4 Vapour heat treatment for *Bactrocera tryoni* on *Mangifera indica* (2010-107), priority 2

- [58] The Treatment lead, Mr Guy HALLMAN (FAO/IAEA), introduced the documents⁹, and the TPPT reviewed and revised the draft PT and the proposed responses to the comments. The draft was edited

⁸ TPPT responses to comments have been approved by the SC they will be posted publicly on the IPP: <https://www.ippc.int/en/core-activities/standards-setting/substantial-concerns-commenting-period-sccp-draft-ispms/>

⁹ 2010-107; 14_TPPT_2016_Sep; 15_TPPT_2016_Sep

to ensure correct wording for the level of efficacy (following CPM-11 (2016) noting ink amendments related to “effective dose”.

- [59] The TPPT discussed the following points based on consultation comments.
- [60] **Whether the draft PT should be restricted to specific varieties/cultivars.** Some consultation comments suggested that the treatment be restricted to only some varieties or cultivars.
- [61] With reference to the ISPM 28 requirement that varietal differences should be supported by evidence, the TPPT discussed literature relevant to varietal differences in mangoes. The TPPT noted that the data submitted for this treatment demonstrated that there were no differences for five mango varieties, and the TPPT discussed whether this was enough to extrapolate to all mango varieties. In this context, one TPPT member presented an analysis from experiments that he had undertaken. The TPPT analyzed the results and concluded that there were no varietal differences in Nam Doc Mai, Kent and Carabao mangoes, but that the differences in treatment effectiveness were given by weight and shape of the fruit. The experiments also demonstrated that when heated air was provided via different heat applications, i.e. fixed (constant high temperature) vs program mode (slower ramp-up time), mortality rates differed for two varieties due to the difference in size and shape. That is, the variety that had a larger surface area for its weight took a longer time to heat up and thus the eggs were exposed to heat for a longer time, resulting in higher mortality. These experiments demonstrated that the ramp-up time was important and that a constant high temperature system (a fixed system) should be used to heat the commodity. The TPPT agreed that the data underlying the treatment schedule in combination with the additional data provided in this meeting were sufficient to extrapolate to all mango varieties and cultivars.
- [62] In accordance, the TPPT modified the treatment to include a requirement on the ramp-up time. This meant that the scheduled 2 hour (120 minute) minimum ramp-up time to reach 48 °C was reduced to a minimum of 90 minutes because the underlying data for the schedule included a 30 minute ramp-up time.
- [63] **Core temperature.** The TPPT also made other consistency changes to the PT for clarity, for instance by changing “pulp temperature” to “core temperature” because “pulp” could be misunderstood to be from anywhere in the fruit. The TPPT considered the need to explain that “core” for mangoes mean the core stone’s surface but agreed that this type of explanation would not belong in the treatment.
- [64] **Minimum humidity.** The minimum of 95% relative humidity was deleted as a stand-alone requirement because it was clarified that the humidity was in relation to the ramp-up time, and that the humidity needed to be maintained for the duration of the treatment time.
- [65] **Treatment schedule time and threshold for initiating holding or dwell time.** Some consultation comments suggested increasing the treatment time from 120 minutes to 144 minutes and avoiding requirements on the fruit core temperature, finding instead that the temperature should be measured at the point of lowest temperature to ensure efficacy. The TPPT considered that the 144 minutes trial was from a later verification trial, not the confirmatory trials directly supporting treatment efficacy, and thus not relevant for the treatment. Instead, the TPPT reviewed the confirmatory trials (Heather *et al.* 1997), and confirmed that the treatment time was 2 hours (120 minutes) and added this paper to the references.
- [66] **Mention of Hallman and Mangan (1997) under “other information”.** A consultation comment suggested elaborating on the “issues associated with temperature regimes and thermal conditioning”, perhaps because it was not fully clear what it referred to. The TPPT felt that it was more appropriate to delete the paragraph entirely as the issues discussed in the paper no longer needed to be emphasized in this section.

- [67] **Clarification of the reference used to calculate the efficacy.** The TPPT added a reference under “other relevant information”¹⁰ to answer the need for additional clarification. The TPPT also noted that the level of efficacy was derived from a combination of confirmatory and verification trials that clearly resulted in more than 95 000 individuals exposed and killed (without survivors). The TPPT therefore accepted that the treatment achieves “not less than” 99.9968% efficacy.
- [68] **Publicly availability of the underlying data.** The TPPT fully endorsed making all the underlying data to support the treatments publicly available, but recognized that some countries may not be in a position to make the papers available publicly. The TPPT also noted that this is not a requirement under ISPM 28. In the specific case, the TPPT encouraged interested contracting parties to contact the relevant organization that may be able to grant access to the information. The TPPT also encouraged countries submitting treatments to make all the supporting information publicly available.
- [69] **Cooling by air or water at ambient temperature.** The TPPT discussed the temperature of ambient air and water used in post-treatment cooling, finding that these may be different depending on operational designs and considered if it should indeed be a requirement. The TPPT agreed that it should be retained in the schedule as it was part of the study of the underlying data and confirmatory trials (and as no consultation comment had suggested to delete it).
- [70] **Description of the efficacy.** The TPPT discussed whether to modify the schedule from “prevents emergence...” to “prevents pupariation...” because this was what had been tested in the confirmatory trials. Some TPPT members felt this was confusing because NPPOs may not know what to do in the event live larvae are detected in treated fruit. The TPPT recognized that the end point (prevention of pupariation) still resulted in the treatment killing the pest. For that reason, the TPPT instead agreed to modify the sentence to “kills not less than...of eggs and larvae”, but added additional information to clarify that failure to pupariate was the measurement of mortality.
- [71] The TPPT:
- (10) *agreed* to submit the responses comments from the 2015 consultation on the draft PT Vapour heat treatment for *Bactrocera tryoni* on *Mangifera indica* (2010-107) to the SC for approval.
 - (11) *agreed* to recommend the draft PT Vapour heat treatment for *Bactrocera tryoni* on *Mangifera indica* (2010-107), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.
 - (12) *agreed* that there is no evidence to support varietal differences in *Mangifera indica* for heat treatments and to include a note on this in the TPPT Working procedures for inclusion in the IPPC Procedure manual for standard setting.
 - (13) *invited* the SC to consider including a note on the submission form for phytosanitary treatments to encourage submitters to make all supporting documentation available publicly.

4. Research Results – Cold tolerance of different *Ceratitis capitata* populations

- [72] Mr Guy HALLMAN presented the preliminary research results from the recent research carried out under his lead in the Insect Pest Control laboratories of FAO/IAEA on variances in cold tolerance of different *Ceratitis capitata* populations (see Appendix 05)¹¹. It was noted that partial results had been previously presented to the TPPT at their 2016 July virtual meeting¹².
- [73] He explained the experimental design and the methodology that had been aimed at being as close as possible to the natural situation to ensure the robustness of the study. The research concluded that the 3rd instar was the most cold tolerant and that the three populations of *C. capitata* did not differ appreciably in cold tolerance.

¹⁰ Heather *et al.* (1997).

¹¹ 08_TPPT_2016_Sep

¹² TPPT July 2016 virtual meeting report: <https://www.ippc.int/en/publications/82730/>

- [74] The TPPT discussed the results and made the following observations:
- [75] - The experimental design of the research was robust.
- [76] - This was the first study to examine different *C. capitata* population's (from different regions of the world) cold tolerance under the same experimental conditions. The TPPT agreed that this, combined with the robustness of the study, provided for a high level of confidence in the results.
- [77] - The TPPT noted that other studies on *C. capitata*, to develop phytosanitary cold treatments, have been done with different methodologies and that they were therefore not directly comparable. The TPPT discussed elements of methodologies that affect treatment schedules and agreed that elements such as infestation method, type of diet, treatment of all life stages or specific instars, determination of instar, whether the fruit had been treated with chemicals or wax, types of analysis and interpretation of results, may affect the schedule significantly. The TPPT discussed the variances in the methodologies of the three studies¹³ highlighting for instance that Santaballa *et al.* (1995) used fruit that had been treated with wax, and that De Lima *et al.* (2007) did not clarify how many days it took to reach the various life stages which could lead to overlaps of the instars.
- [78] - That the data showed there was no evidence to support significant differences in cold tolerance of *C. capitata* populations from different geographical regions, and the TPPT noted that differences, apparent from the literature, might instead be due to differences in the methodology applied.
- [79] - That the scope of the research was to understand the population differences and that additional research would not be necessary. The TPPT stressed that, with reference to ISPM 28, any contracting party that may have concerns needs to present robust evidence to support and demonstrate these concerns.
- [80] – The IAEA does compatibility tests for different *C. capitata* populations for implementation of sterile insect technique programmes in various countries and evidence from this work also supported that there were no differences in response to the treatment from different geographic populations.
- [81] The TPPT:
- (14) *agreed* that, based on the study undertaken by Mr Guy HALLMAN (USA/IAEA), there is no evidence that different populations of *Ceratitis capitata* respond differently to cold treatments and *agreed* to update the appropriate sections of the TPPT Working procedures for inclusion into the IPPC Procedure manual for standard setting accordingly.
- (15) *thanked* Mr Guy HALLMAN (USA/IAEA) and the FAO/IAEA Joint Division for undertaking the experiments to compare three populations of *Ceratitis capitata* for tolerance to cold treatments and for actively helping in progressing the development of international standards.

5. Review of draft Phytosanitary Treatments Considering Comments from the 2014 Consultation

- [82] Compiled comments from the 2014 first consultation are available on the International Phytosanitary Portal (IPP – www.ippc.int)¹⁴. The Secretariat will forward editorial comments to the IPPC scientific editor and translation comments to FAO translation-service. Once TPPT responses to comments have been approved by the SC they will be posted publicly on the same IPP page. The draft PTs were edited to ensure the correct wording for level of efficacy (following CPM-11 (2016) noting ink amendments related to “effective dose”).

¹³ De Lima *et al.* (2007), Santaballa *et al.* (1995) and Willink *et al.* (2007a, 2007b)

¹⁴ TPPT responses to comments have been approved by the SC they will be posted publicly on the IPP: <https://www.ippc.int/en/core-activities/standards-setting/substantial-concerns-commenting-period-sccp-draft-ispms/>

- [83] The Secretariat recalled that the draft PTs presented under this agenda item had been made pending the research results reported under section 4 of this report.

5.1 Cold treatment for *Ceratitits capitata* on *Citrus sinensis* var. Navel and Valencia (2010-103), Priority 1

- [84] The Treatment lead, Mr Glenn BOWMAN (Australia), introduced the documents¹⁵, and the TPPT reviewed the draft PT and the proposed responses to the comments.
- [85] **Cultivar/variatal differences.** One TPPT member presented results from an analysis carried out by the Phytosanitary Measures Research Group (PMRG)¹⁶ that had considered a number of factors to determine if the type of cultivar would influence treatment efficacy (factors considered included physiological state of the fruit, quality aspects, physical attributes such as acid content, osmotic concentration effects on metabolism of insect, seasonal differences for fruit and maturity, interactions of insect with host). The analysis concluded that differences in mortality occurred at sub-lethal treatments (e.g. LT 50) but that there were no differences at the LT 99 and above for citrus cultivars. Based on this, the TPPT concluded that there was no evidence to support that this treatment should be for “Navel” and “Valencia” only. Consequently, the TPPT agreed to combine this PT (2010-103) and the cold treatment for *Ceratitits capitata* on *Citrus sinensis* 2007-206A.
- [86] The TPPT discussed the following points based on the consultation comments:
- [87] **Defining frequency of temperature monitoring and other operational guidance.** While the TPPT agreed that this operational guidance would be useful and in line with section 3.2.2 of ISPM 28, the TPPT also noted that the three currently adopted cold treatments do not contain this type of information. Additionally, other critical information for cold treatment compliance would also then need to be added. The TPPT noted that this information should be included in the draft ISPM on *Requirements for the use of temperature treatments as a phytosanitary measure* (2014-005).
- [88] **Lack of confidence in the underlying data.** Several consultation comments pointed out a number of variables that may have contributed to the shorter kill time of 16 days in the draft PT, resulting in the schedule possibly not being representative of commercial circumstances. The TPPT discussed the issues raised. In regards to the **colony replenishment** the TPPT did not find evidence to demonstrate that the colony replenishment had not been done in an appropriate manner. As to whether the **chemical treatment** of the fruit might have affected the fruit flies, some TPPT members believed that since the insecticide (malathion) had been applied five months before harvest of the fruit used in the experiment, it would not have affected the treatment. The TPPT agreed that there was no evidence to demonstrate that the pesticide application could have influenced the results. Regarding the question on the **high colony and control mortality**, the TPPT recognized that this could have indicated problems with the colony but that the high mortality could also be due to a number of other reasons, such as high infestation rate. The TPPT examined the data on the colony and concluded that there were no apparent problems with the colony, and therefore the TPPT did not feel that this necessarily indicated lack of confidence in the data.
- [89] **Artificial infestation.** The TPPT discussed if there was any available evidence comparing the cold tolerance of *C. capitata* in the artificially infested oranges with naturally infested ones. The TPPT concluded that in Santaballa *et al.* (1995) the artificial infestation was done according to TPPT criteria (see TPPT face-to-face meeting 2014 report, section 4) and was therefore acceptable.
- [90] **Difference in cold tolerance between various *C. capitata* populations.** Refer to section 4 of this report for the full discussions.
- [91] **Different schedules based on different research.** The TPPT clarified that the various schedules were based on the differences in efficacy levels. The TPPT also noted that the end point measuring of

¹⁵ 2010-103; 32_TPPT_2016_Sep; 40_TPPT_2016_Sep

¹⁶ 43_TPPT_2016_Sep

mortality differed in the various studies, but that the TPPT did not find issues in the studies that would undermine the various schedules.

[92] **Pre-cooling.** The TPPT recalled that this was an operational requirement and it would be covered by the draft ISPM on *Requirements for the use of temperature treatments as a phytosanitary measure* (2014-005).

[93] The TPPT:

- (16) *concluded* that there are no appreciable differences in *Citrus* cultivar/variety effects on efficacy of cold treatments and agreed to update the TPPT Working procedures according (for inclusion in the IPPC Procedure manual for standard setting).
- (17) *agreed* to submit the responses to comments from the 2014 consultation on the draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* var. Navel and Valencia (2010-103) to the SC for approval.
- (18) *agreed* to combine the schedule for the draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* var. Navel and Valencia (2010-103) with the draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A) and *asked* the SC to take subject 2010-103 off the *List of topics for IPPC standards* accordingly.
- (19) *agreed* to add a note to the TPPT working procedures in the IPPC Procedure manual for standard setting regarding artificial infestation.

5.2 Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* var. Solo (2009-109), Priority 2

[94] The Treatment lead, Mr Guy HALLMAN (FAO/IAEA), introduced the documents¹⁷, and the TPPT reviewed and revised the draft PT and the proposed responses to the comments.

[95] The TPPT discussed the following points:

[96] **Differences in varietal/cultivar responses to heat treatments.** The TPPT did not find any evidence to support any possible varietal or cultivar differences in *Carica papaya* and the TPPT agreed to adjust the scope to species level accordingly (i.e. to “*C. papaya*” and not “*C. papaya* var. Solo”).

[97] **Most tolerant life stage.** The TPPT confirmed that, according to the literature available, eggs are more tolerant to heat than larvae. The TPPT confirmed that the experiments used to support this treatment had exposed the fruit, containing both the eggs and larvae, to heat. The studies found that third instar larvae, even if they are deep in the fruit, are still less tolerant to heat than eggs, which are located close to the surface of the fruit.

[98] **Population differences in heat tolerance.** One consultation comment suggested that there may be differences in heat tolerance of *B. cucurbitae* populations, and one TPPT member presented a summary of possible evidence for *B. dorsalis*. The result indicated possible heat tolerance differences between *B. cucurbitae* tested in the two countries. The TPPT reviewed the information and pointed out the following issues: (i) the experiment was done *in vitro*; (ii) it had used hot water immersion and not VHT; (iii) interbreeding between populations would limit significant differences in how the fruit fly populations tested would respond to the treatment; (iv) other data demonstrates how just a +/- 0.5 °C temperature difference may influence the mortality significantly, and it was not clear how and if the equipment used for the experiments in the two countries were calibrated resulting in potential differences in temperature between the two sets of equipment.

[99] In spite of these considerations, the TPPT recognized that the information provided in this meeting could indicate some differences and that there was not currently other evidence to demonstrate the opposite. In addition, the stated level of efficacy of the treatment was not very high and, if there were population differences this could result in the treatment not being effective against all populations.

¹⁷ 2009-109; 11_TPPT_2016_Sep; 10_TPPT_2016_Sep

Therefore, the TPPT decided to defer the decision on this treatment until further analysis and data was made available to the TPPT.

[100] The TPPT also noted that the stated efficacy of the treatment schedule (99.86%) was incorrect as it was not that same as that agreed at the 2013 meeting of TPPT¹⁸. The level of efficacy was therefore corrected to the formally agreed level of 99.9841%.

[101] The TPPT:

- (20) *invited* the SC to note the change in title and scope from *Bactrocera dorsalis* on *Carica papaya* var. Solo (2009-109) to *Bactrocera dorsalis* on *Carica papaya* (2009-109).
- (21) *encouraged* the contracting party that had suggested possible *Bactrocera dorsalis* population differences in responses to heat to submit a full report on the data to the TPPT for further review.

5.3 Vapour heat treatment for *Ceratitis capitata* on *Mangifera indica* (2010-106), Priority 2

[102] The Treatment lead, Mr Guy HALLMAN (FAO/IAEA), introduced the documents¹⁹, and the TPPT reviewed and revised the draft phytosanitary treatment (PT) and the proposed responses to the comments. Several comments were identical to those received for *Bactrocera dorsalis* on *Carica papaya* var. Solo (2009-109) and are reported under section 5.2 of this report.

[103] Taking into account the discussions under section 5.2 of this report, the TPPT highlighted that, despite any possible population differences, the treatment schedule was efficacious to a high degree and therefore agreed that this draft treatment was sufficiently robust to progress further.

[104] The TPPT added under “other relevant information” the measurement of mortality, which was failure to pupariate.

[105] The TPPT:

- (22) *agreed* to submit the responses to comments from the 2014 consultation on the draft PT Vapour heat treatment for *Ceratitis capitata* on *Mangifera indica* (2010-106) to the SC for approval.
- (23) *agreed* to recommend the draft PT Vapour heat treatment for *Ceratitis capitata* on *Mangifera indica* (2010-106), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.

5.4 Cold treatment for *Ceratitis capitata* on *Citrus clementina* var. *Clemenules* (2010-102), Priority 2

[106] The Treatment lead, Mr Eduardo WILLINK (Argentina), introduced the documents²⁰, and the TPPT reviewed and revised the draft PT and the proposed responses to the comments.

[107] The majority of substantial comments received on this treatment were identical to the ones responded to under 5.1 and reference is made to that section for the full discussions (note that the concerns related to the Santaballa *et al.* 1997 and 2009 data were similar or identical in the various consultation comments).

[108] In addition, the TPPT discussed the following points.

[109] **Possible rejection of data supporting the treatment.** One consultation comment raised doubts on the Santaballa *et al.* (2009) research as the study had been rejected by a contracting party. One TPPT member explained that the contracting party had requested additional data following a different research protocol but the study had not been finalized. The TPPT did not wish to discuss the potential

¹⁸ 2013-07 TPPT meeting report: <https://www.ippc.int/en/publications/2437/>

¹⁹ 2010-106; 13_TPPT_2016_Sep; 12_TPPT_2016_Sep

²⁰ 2010-102; 27_TPPT_2016_Sep; 28_TPPT_2016_Sep

new data from this second study, as they did not have access to it but discussed the data from Santaballa *et al.* (2009) and could not find any specific reason to reject it. The TPPT confirmed that they felt the research was acceptable.

[110] **Cultivar or species level.** Following previous discussions (see section 5.1 of this report), the TPPT concluded that there was no evidence to support that this treatment should be for the variety “Clemenules” only. Consequently, the TPPT modified the title of the treatment and deleted the note relating to this issue under “other relevant information”.

[111] The TPPT considered whether it would be helpful for the further approval process of the draft treatment to include mention of the ISPM 28 requirement stating that supposed varietal differences should be supported by evidence, and that no such evidence had been demonstrated for the specific treatment. The TPPT felt that such a note was superfluous, as no evidence had been presented and as contracting parties should already know and refer to ISPM 28. Instead, the TPPT felt it was sufficient, and consistent with a similar note in PT 17, to simply note that the schedule had been developed using the variety “Clemenules”.

[112] **How to express level of efficacy.** The TPPT discussed whether to use “this schedule kills...” or “this schedule prevents the emergence of ... eggs and larvae” to express the efficacy. One TPPT member advocated for using “prevents the emergence” because he believed this reflected the science underlying the treatment and because there could be live larvae if inspection is done directly after treatment. Other TPPT members were concerned that the expression “prevents the emergence of...” would not allow countries to take regulatory action upon inception of live larvae. The TPPT noted that when measuring the treatment endpoint in the confirmatory trials, the “fruit were cut after storage in laboratory until they reached 25 °C in order to observe the presence of larvae alive”. The TPPT therefore considered larval mortality was the treatment endpoint in this case. The TPPT agreed to use “kills...” also in consistency with currently adopted cold treatments.

[113] **Efficacy calculation.** The TPPT reviewed the data and corrected the efficacy to 99.9900% (instead of 99.9906%) following the TPPT July 2013 decision on calculation methods.

[114] The TPPT:

- (24) *invited* the SC to note the change in title of the draft PT from *Ceratitidis capitata* on *Citrus clementina* var. Clemenules (2010-102) to *Ceratitidis capitata* on *Citrus clementina* (2010-102).
- (25) *agreed* to submit the responses to comments from the 2014 consultation on the draft PT Cold treatment *Ceratitidis capitata* on *Citrus clementina* (2010-102) to the SC for approval.
- (26) *agreed* to recommend the draft PT Cold treatment *Ceratitidis capitata* on *Citrus clementina* (2010-102), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.

6. Review of the draft Phytosanitary Treatments Considering Objections Raised Before CPM-7 (2012) and CPM-9 (2014)

[115] The TPPT Steward introduced the objections raised for a number of cold treatments presented for adoption at CPM-7 (2012) and CPM-9 (2014)²¹ and the relative TPPT responses drafted at the TPPT virtual meeting in September 2014²². The TPPT reviewed the draft responses and adjusted them according to the conclusions on the issue of possible variances in cold tolerance of *Ceratitidis capitata* populations from different geographical regions (see section 4 of this report) and on the issue of possible varietal / cultivar differences (see section 5.4 of this report).

[116] All draft PTs were edited to ensure the correct wording for level of efficacy (following CPM-11 (2016) noting ink amendments related to “effective dose”). The TPPT added information on the failure

²¹ CPM papers on the objections raised [CPM-9 \(2014\)](#); [CPM-7 \(2012\)](#)

²² 37_TPPT_2016_Sep

measurement in the draft PTs where this was appropriate. Once TPPT responses to the objections have been approved by the SC they will be posted publicly on the IPP²³.

6.1 Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A), Priority 1

[117] The Treatment lead, Mr Eduardo WILLINK (Argentina), introduced the documents²⁴, and the TPPT reviewed the draft phytosanitary treatment (PT) and the proposed responses to the objections.

[118] As the TPPT had agreed to include the schedule previously contained in draft Cold treatment for *C. capitata* on *Citrus sinensis* var. Navel and Valencia (2010-103) (see discussions under section 5.1 of this report), the TPPT updated the treatment by incorporating any relevant information previously included in the other treatment (2010-103). The TPPT noted that this treatment now contained two schedules for 2 °C for different lengths and different levels of efficacy. The TPPT recognized that this could perhaps cause some confusion for NPPOs but noted that countries may chose the schedule that they prefer based on the risk assessment carried out and the level of efficacy that is required accordingly.

[119] For the schedule incorporated from the other treatment (2010-103), the TPPT deleted the varieties as it had been confirmed that there were no varietal differences (see section 5.1 of this report). The TPPT considered if the level of efficacy needed to be recalculated in combining the varieties, and agreed that this was not needed. However, in reviewing the level of efficacy, the TPPT noticed that the recalculation of the efficacy, which the TPPT in July 2013 agreed to (based on the non-acceptance of a 17-day replicate) had inadvertently not been included in the schedule so the TPPT corrected this.

[120] The TPPT also deleted mention of varieties for the other schedules in draft treatment and, for these, recalculated the confidence levels on the basis of all the combined varieties. The efficacy recalculated on combining the two varieties was found to be 99.999% (see Appendix 06 for calculation).

[121] The TPPT agreed to delete the previous third schedule (2 °C or below for 21 continuous days with a level of efficacy of 99.9991%) as the efficacy levels between this schedule and the new schedule (2 °C or below for 18 continuous days with a level of efficacy of 99.999%) were identical (but for 0.0001 percent point), and because the 18 day schedule was less trade restrictive.

[122] The TPPT:

- (27) *agreed* to submit the responses to the objection comments for the draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A) to the SC for approval.
- (28) *agreed* to recommend the draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.

6.2 Cold treatment for *Ceratitis capitata* on *Citrus reticulata* × *C. sinensis* (2007-206B), Priority 1

[123] The Treatment lead, Mr Eduardo WILLINK (Argentina), introduced the documents²⁵, and the TPPT reviewed and revised the draft phytosanitary treatment (PT) and the proposed responses to the objections.

[124] **Cultivar / varietal difference.** In accordance with the TPPT discussions under section 5.1 of this report, the TPPT recalculated the level of efficacy by combining the varieties “Ellendale” and “Murcott”, as the previous schedules had been calculated based only on “Murcott” (most stringent). The efficacy was recalculated to 99.9987% (see appendix 06 for calculation)

²³ SC endorsed TPPT responses to objections will be posted publicly on the IPP: <https://www.ippc.int/en/core-activities/standards-setting/objections-draft-ispms-prior-cpm/>

²⁴ 2007-206A; 29_TPPT_2016_Sep

²⁵ 2007-206B; 30_TPPT_2016_Sep

[125] **Most tolerant life stage.** The TPPT discussed the objection from China stating that usually the third instar is the most tolerant larva stage for cold treatments whereas the data from De Lima *et al.* (2007) demonstrated that the most tolerant life stage was the second instar larvae. The TPPT re-examined the data from De Lima *et al.* (2007) and concluded that the difference in tolerance between second and third instar were extremely small and unlikely to be statistically significant. The TPPT also noted that the De Lima *et al.* (2007) study was highly robust and that it demonstrated that all life stages were killed after treatment application.

[126] The TPPT:

- (29) *agreed* to submit the responses to the objection comments for the draft PT Cold treatment for *Ceratitis capitata* on *Citrus reticulata* × *C. sinensis* (2007-206B) to the SC for approval.
- (30) *agreed* to recommend the draft PT Cold treatment for *Ceratitis capitata* on *Citrus reticulata* × *C. sinensis* (2007-206B), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.

6.3 Cold treatment for *Ceratitis capitata* on *Citrus limon* (2007-206C), Priority 1

[127] The Assistant lead, Mr Mike ORMSBY (New Zealand), introduced the documents²⁶, and the TPPT reviewed and revised the draft phytosanitary treatment (PT) and the proposed responses to the objections.

[128] The TPPT discussed the objection comment related to operational implementation challenges that could result in chilling injuries. The TPPT agreed that some countries' application of the treatment may result in chilling injuries to the fruit and also noted that some countries do not agree that *Citrus limon* is a host for *Ceratitis capitata*. However, the TPPT had reviewed the treatment schedule when submitted and stressed that it is being used successfully by several countries. The TPPT noted that this was an operational issue and that the schedule was still valid.

[129] The TPPT:

- (31) *agreed* to submit the responses to the objection comments for the draft PT Cold treatment for *Ceratitis capitata* on *Citrus limon* (2007-206C) to the SC for approval.
- (32) *agreed* to recommend the draft PT Cold treatment for *Ceratitis capitata* on *Citrus limon* (2007-206C), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.
- (33) *invited* the SC to consider the implementation issues identified by the TPPT.

6.4 Cold treatment for *Ceratitis capitata* on *Citrus paradisi* (2007-210), Priority 1

[130] The Treatment lead, Mr Daojian YU (China), introduced the documents²⁷, and the TPPT reviewed and revised the draft phytosanitary treatment (PT) and the proposed responses to the objections.

[131] The TPPT discussed if it was possible to include a reference to substitute the anonymous references but concluded that it was not possible as the data was not publically available. This was the same issue discussed earlier in the meeting and the TPPT encouraged contracting parties to make their data publically available, noting that this was outside of the TPPT's control.

[132] As to the objection related to cultivar and varietal differences in *Citrus paradisi*, the TPPT highlighted that there was no evidence to substantiate these differences in cold treatment efficacy in *Citrus* species (see section 5.1 of this report). In addition, the TPPT noted that Willink *et al.* (2007) demonstrated the efficacy of the treatment schedule across four varieties of *C. paradisi* and that no significant differences in varietal responses were found. The TPPT assessed that the samples tested in this study with 3 °C freedom was more than adequate to conclude on the varietal issue for this species. Lastly, the TPPT recalled that, according to ISPM 28, treatment applicability is accepted at species level.

²⁶ 2007-206C; 38_TPPT_2016_Sep

²⁷ 2007-210; 16_TPPT_2016_Sep

[133] The TPPT:

- (34) *agreed* to submit the responses to the objection comments for the draft PT Cold treatment for *Ceratitidis capitata* on *Citrus paradisi* (2007-210) to the SC for approval.
- (35) *agreed* to recommend the draft PT Cold treatment for *Ceratitidis capitata* on *Citrus paradisi* (2007-210), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.

6.5 Cold treatment for *Ceratitidis capitata* on *Citrus reticulata* cultivars and hybrids (2007-212), Priority 1

[134] The Treatment lead, Mr Mike ORMSBY (New Zealand), introduced the documents²⁸, and the TPPT reviewed the draft phytosanitary treatment (PT) and the proposed responses to the objections. The TPPT concluded that this treatment schedule was no longer needed for *Citrus clementina* and the Ellendale and Murcott cultivars (see section 5.1 and 6.2 of this report) as these hosts were included in other equally or more efficacious but shorter schedules). The TPPT discussed whether it was possible to exclude also “Nova” but as this was a particular hybrid that was not included in other schedules the TPPT agreed to retain “Nova”. The TPPT agreed to delete the description of the hybrid as the taxonomic classification used²⁹ describes “Nova” simply as “reticulata” and not with its hybrid description. In accordance, the TPPT modified the title of the treatment to “*Citrus reticulata*” and clarified that the schedule was built using data on “Nova”. The TPPT noted that this conclusion should also satisfy the objection to the adoption received in 2012 in relation to the treatment schedule not being the least restrictive one available.

[135] The TPPT:

- (36) *agreed* to submit the responses to the objection comments for the draft PT Cold treatment for *Citrus reticulata* cultivars and hybrids (2007-212) to the SC for approval.
- (37) *agreed* to restrict the scope of the treatment to *Citrus reticulata* (i.e. hybrid “Nova”) and *invited* the SC to note the change in title from Cold treatment for *Ceratitidis capitata* on *Citrus reticulata* cultivars and hybrids (2007-212) to Cold treatment for *Ceratitidis capitata* on *Citrus reticulata* (2007-212).
- (38) *agreed* to recommend the draft PT Cold treatment for *Ceratitidis capitata* on *Citrus reticulata* (2007-212), as modified in this meeting, to the SC for their consideration to recommend it to the CPM for adoption.

7. Drafting of ISPMs on requirements for phytosanitary treatment use

7.1 Requirements for the use of fumigation as a phytosanitary measure (2014-004) – Priority 1

[136] Discussion on this agenda item was deferred.

8. Follow-up actions from IPPC bodies

8.1 2016 Standards Committee Working Group (SC-7)

[137] The TPPT Steward informed the TPPT of the recent discussions in the SC-7 (May, 2016) on the draft revision to Annex 1 and 2 of to ISPM 15 (*Regulation of wood packaging material in international trade*) for the inclusion of Sulphuryl fluoride fumigation of wood packaging material (2006-010A) and for the revision of the dielectric heating section in Annex 1 of ISPM 15 (2006-010B). The SC-7 had not been able to approve the draft revision for second consultation due to some key issues raised by an

²⁸ 2007-212; 31_TPPT_2016_Sep

²⁹ Citrus species and hybrids are named according to the nomenclature in Cottin, R. 2002. *Citrus of the world: a citrus directory*. France, INRA-CIRAD

SC-7 member and the SC-7 felt the issue was very technical and would require input from the TPPT. The SC-7 agreed to request the advice of the TPPT on this issue³⁰.

[138] Mr MEYERS presented a paper outlining his considerations³¹. The TPPT discussed the issues raised in the SC-7, specifically in relation to method of calculation of the CT product and how the data was obtained (e.g. in table 4 in the draft revision to ISPM 15) and the efficacy of the SF treatment at different temperatures and different concentrations. Most of the issues raised fed into the discussions under section 3.3 of this report and are reported in that section.

[139] The TPPT discussed substantive issues raised in the SC-7 particularly pertaining to consultation comment no. 36 (from the compiled comments on the revision to Annex 1 of ISPM 15) and provided the following guidance to the SC-7:

[140] **Inconsistencies in results.** The TPPT noted that there were different conclusions in the various papers cited but pointed out that this did not undermine the trust that the minimum requirements for the proposed schedule would result in an efficacious treatment. The papers had been referenced to provide additional information to support the schedule. Similarly, the TPPT agreed that the inconsistencies reported regarding the initial dose requirements were irrelevant as long as the CT product was achieved. As to further studies needed to decide on a dose for 20 °C and 25 °C, the TPPT noted that data had been reviewed for 20 °C and that no schedule for 25 °C was being proposed.

[141] **Practicality in measuring gas concentrations throughout the profile of the wood.** The TPPT found that this would be impossible to implement, and that the concentrations would be lower than headspace readings (cf. paragraph 67 in the draft revision). The TPPT recommended that “throughout the profile” should be deleted in the draft revision to Annex 1 of ISPM 15.

[142] **Calculation of CT for a particular treatment.** The TPPT agreed that guidance on the method calculation for fumigation CT should be included in the draft ISPM on *Requirements for the use of fumigation as a phytosanitary measure* (2014-004).

[143] The TPPT:

- (39) *invited* the SC to consider the recommendations and discussions in section 3.3 and this section (8.1) on the issues raised by the SC-7 in May 2016 on the draft revision to Annex 1 and 2 of to ISPM 15 (*Regulation of wood packaging material in international trade*) for the inclusion of Sulphuryl fluoride fumigation of wood packaging material (2006-010A) and for the revision of the dielectric heating section in Annex 1 of ISPM 15 (2006-010B).

8.2 2016 May Standards Committee (“process load”)

[144] Discussion on this agenda item was deferred.

9. TPPT working procedures and research recommendations

9.1 Estimated numbers of treated pests using both direct and modified (formula) calculation

[145] Discussion on this agenda item was deferred.

³⁰ 06_TPPT_2016_Sep_Rev1

³¹ 33_TPPT_2016_Sep

9.2 Annotated template for draft phytosanitary treatments

[146] The Secretariat introduced an annotated template for draft phytosanitary treatments³², which had been developed to provide a better foundation for consistency in wording and terminology across draft PTs. The template had been developed taking into consideration all currently adopted PTs.

[147] The TPPT:

- (40) *invited* the Secretariat to update the annotated template for draft PTs following TPPT discussions from this meeting.
- (41) *agreed* to use the annotated template as a basis for the development of draft PTs (available on the IPP).

10. Liaison Ozone Secretariat (Vienna Convention and Montreal Protocol / United Nations Environment Programme (UNEP))

[148] Mr Eduardo WILLINK (Argentina) gave a presentation of the Montreal Protocol and recent liaison activities with the Ozone Secretariat (Vienna Convention and Montreal Protocol / United Nations Environment Programme (UNEP))³³. He highlighted the importance of the work carried out by the Ozone Secretariat in terms of finding alternatives to Methyl bromide.

[149] Mr Guy HALLMAN's (USA) update from the activities of the Phytosanitary Measures Research Group (PMRG)³⁴ was deferred due to lack of time.

[150] The TPPT:

- (42) *noted* the update from the liaison activities with the Ozone Secretariat.

11. Overview of the TPPT work programme

11.1 General overview, SWOT analysis and next steps

Discussion on this agenda item was deferred.

11.2 Status of draft phytosanitary treatments and draft ISPMs under the TPPT work programme

[151] The Secretariat provided details on the draft PTs and draft ISPMs currently on the TPPT work programme³⁵.

[152] The TPPT noted the changes proposed to the *List of topics for IPPC standards* in the July 2016 TPPT virtual meeting (to 2007-206B and 2007-210).

[153] The Secretariat informed the TPPT that all draft PTs that were approved for submission to the SC (via e-decision, together with the responses to consultation comments and responses to objections, would need to be finally reviewed by TPPT members and sent to the Secretariat by 16 September 2016.

[154] The TPPT:

- (43) *invited* the SC to consider the proposed modifications to the *List of topics for IPPC standards* proposed done in the July 2016 virtual meeting and in this face-to-face meeting.

³² 39_TPPT_2016_Sep; Link to the template for draft PTs (once available): <https://www.ippc.int/en/core-activities/standards-setting/development-standards/>

³³ [Link to Ozone Secretariat website](#)

³⁴ [Link to PMRG page](#)

³⁵ 07_TPPT_2016_Sep; [Link to LOT](#)

11.3 Methyl Bromide and Sulphuryl Fluoride Fumigation for *Chlorophorus annularis* in bamboo

[155] Mr Daojian YU (China) had submitted a paper on Methyl bromide and Sulphuryl fluoride fumigations for *Chlorophorus annularis* in bamboo commodities explaining that due to the high volumes of bamboo exports from China, IPPC recognized treatment schedules were desired to facilitate trade. China and the United States of America had worked together during 2007-2009 to develop alternative fumigation schedules for this pest in bamboo. The results had been published in the Journal of Economic Entomology (Vol. 102, no. 3) and China would tentatively submit the treatment in a future call for treatments.

[156] The discussions were deferred but the TPPT agreed to submit written comments to Mr Daojian YU.

[157] The TPPT:

- (44) *agreed* to submit written comments on the draft treatment on Methyl Bromide and Sulphuryl Fluoride Fumigation for *Chlorophorus annularis* in bamboo to Mr Daojing YU (yudj_2002@aliyun.com) by 15 October 2016.

11.4 TPPT work plan 2016-2017

[158] The TPPT reviewed the work plan for 2015-2016 as developed in this meeting (Appendix 07).

[159] For ease of reference, a list of action points arising from the meeting is attached as Appendix 08. TPPT members were reminded to check the action list for any deadlines and make efforts to ensure they meet these deadlines.

[160] The Secretariat noted that after previous TPPT meetings the Secretariat would normally open e-forums for the approval of the meeting report, but this adds to the overall approval and posting time of the report. For this reason, the Secretariat suggested that the TPPT would agree to not review the report, but allow the Secretariat together with the rapporteur, Chairperson and TPPT Steward to finalize the report. The TPPT agreed with this process.

[161] The following virtual meetings were tentatively scheduled:

- 26 October 2016
- 8 December 2016
- 23 February 2017
- 25 April 2017

[162] The next TPPT face-to-face meeting was tentatively scheduled for 17-21 July 2017 to be hosted by IAEA in Vienna, Austria. The panel was reminded to check the IPP calendar for updated information.

12. Recommendations to the SC

[163] The following summarizes the TPPT recommendations to the SC from this meeting.

[164] The TPPT agreed to submit the responses to comments from the 2014 consultation on the following draft PTs to the SC for approval:

- draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* var. Navel and Valencia (2010-103)
- draft PT Vapour heat treatment for *Ceratitis capitata* on *Mangifera indica* (2010-106)
- draft PT Cold treatment *Ceratitis capitata* on *Citrus clementina* (2010-102).

[165] The TPPT agreed to submit the responses to comments from the 2015 consultation on the following draft PTs to the SC for approval:

- draft PT Heat treatment of wood using dielectric heating (2007-114)

- draft PT Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A)
- draft PT Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B)
- draft PT Vapour heat treatment for *Bactrocera tryoni* on *Mangifera indica* (2010-107).

[166] The TPPT agreed to submit the responses to objections received prior to CPM-7 (2012) and/or CPM-9 (2012) on the following draft PTs to the SC for approval:

- draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A)
- draft PT Cold treatment for *Ceratitis capitata* on *Citrus reticulata* x *C. sinensis* (2007-206B)
- draft PT Cold treatment for *Ceratitis capitata* on *Citrus limon* (2007-206C)
- draft PT Cold treatment for *Ceratitis capitata* on *Citrus paradisi* (2007-210)
- draft PT Cold treatment for *Citrus reticulata* cultivars and hybrids (2007-212).

[167] The TPPT agreed to recommend the following draft PTs to the SC for their consideration to recommend them to the CPM for adoption:

- Heat treatment of wood using dielectric heating (2007-114)
- Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A)
- Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B)
- Vapour heat treatment for *Bactrocera tryoni* on *Mangifera indica* (2010-107)
- Cold treatment *Ceratitis capitata* on *Citrus clementina* (2010-102)
- Vapour heat treatment for *Ceratitis capitata* on *Mangifera indica* (2010-106)
- Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A)
- Cold treatment for *Ceratitis capitata* on *Citrus reticulata* x *C. sinensis* (2007-206B)
- Cold treatment for *Ceratitis capitata* on *Citrus limon* (2007-206C)
- Cold treatment for *Ceratitis capitata* on *Citrus paradisi* (2007-210)
- Cold treatment for *Ceratitis capitata* on *Citrus reticulata* (2007-212).

[168] The TPPT agreed to recommended the following modifications to the *List of topics for IPPC standards*, proposed in the July 2016 virtual meeting and in this face-to-face meeting, to the SC:

- *agreed* to combine the schedule for the draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* var. Navel and Valencia (2010-103) with the draft PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A) and *asked* the SC to take subject 2010-103 off the List of topics for IPPC standards accordingly.
- *invited* the SC to note the change in title and scope from *Bactrocera dorsalis* on *Carica papaya* var. Solo (2009-109) to *Bactrocera dorsalis* on *Carica papaya* (2009-109).
- *invited* the SC to note the change in title of the draft PT from *Ceratitis capitata* on *Citrus clementina* var. Clemenules (2010-102) to *Ceratitis capitata* on *Citrus clementina* (2010-102).
- *invited* the SC to note the change in title from Cold treatment for *Ceratitis capitata* on *Citrus reticulata* cultivars and hybrids (2007-212) to Cold treatment for *Ceratitis capitata* on *Citrus reticulata* (2007-212).

[169] The TPPT also recommended the following to the SC:

- *invited* the SC to consider the consultation comment requesting that all the documentation (calculations, CT schedules, etc.) supporting the TPPT decisions be made available publicly on the IPP.
- *invited* the SC to consider the implementation issues identified by the TPPT for the draft PT Heat treatment of wood using dielectric heating (2007-114).

- *invited* the SC to consider the implementation issues identified by the TPPT for the draft PT Cold treatment for *Ceratitis capitata* on *Citrus limon* (2007-206C).
- *invited* the SC to consider including a note on the submission form for phytosanitary treatments to encourage submitters to make all supporting documentation available publicly.
- *invited* the SC to consider the recommendations and discussions in section 3.3 and this section (8.1) on the issues raised by the SC-7 in May 2016 on the draft revision to Annex 1 and 2 of to ISPM 15 (*Regulation of wood packaging material in international trade*) for the inclusion of Sulphuryl fluoride fumigation of wood packaging material (2006-010A) and for the revision of the dielectric heating section in Annex 1 of ISPM 15 (2006-010B).

13. Other business

[170] No other business.

14. Close of the meeting

[171] Ms Tomoko NAJAYAMA, Director of the Plant Quarantine Office, Food Safety and Consumers Affairs Bureau of MAFF participated in the closure of the meeting. She thanked the TPPT, reiterated the important work they do and thanked them for their good progress.

[172] The TPPT thanked the Mr Mathew SMYTH for his role as Chairperson and for his efficient running of the meeting and Mr Michael ORMSBY for taking auspicious notes as Rapporteur. The TPPT invited Mr SMYTH to continue as Chairperson in the interim between this and the next meeting and he accepted.

[173] The Chairperson expressed his appreciation to the TPPT, thanked the Secretariat for their support.

[174] The Secretariat thanked the NPPO of Japan for hosting and financially supporting this meeting, for the interesting field trip to the Yokohama Plant Protection Station, the reception and the excellent organization of the local arrangements. The Secretariat also expressed deep gratitude for the financial support to the development of phytosanitary treatments over the years.

[175] The Secretariat thanked all the panel members for their essential contributions and gave special recognition to the Chairperson and Rapporteur and closed the meeting.

Appendix 01: Agenda**2016 MEETING OF THE TECHNICAL PANEL ON
PHYTOSANITARY TREATMENTS***29 August – 02 September 2016**Tokyo, Japan****Meeting Schedule******Monday: 10:00 am to 5:00 pm******Tuesday through Friday: 9:00 am to 5:00 pm*****AGENDA**

AGENDA ITEM	DOCUMENT NO.	PRESENTER
1. Opening of the meeting		IPPC SECRETARIAT
<ul style="list-style-type: none"> Opening Remarks by the Host Agency Election of the Chairperson Election of the Rapporteur Adoption of the Agenda 	01_TPPT_2016_Sep	MAFF Japan MOREIRA CHAIRPERSON CHAIRPERSON
2. Administrative Matters		CHAIRPERSON
<ul style="list-style-type: none"> Documents List Participants List Local Information 	02_TPPT_2016_Sep 03_TPPT_2016_Sep 04_TPPT_2016_Sep	MOREIRA MOREIRA MAFF Japan
3. Review of Draft Phytosanitary Treatments (PTs) Considering Comments from the 2015 Consultation	Link to 2015 compiled comments	CHAIRPERSON
3.1 Heat treatment of wood using dielectric heating (2007-114), priority 1 - Treatment lead responses to comments from 2015 consultation period - Treatment lead summary - Reference: Dubey et al 2016 - Reference: Tubajika et al 2006	2007-114 22_TPPT_2016_Sep 24_TPPT_2016_Sep 36_TPPT_2016_Sep 42_TPPT_2016_Sep	ORMSBY
3.2 Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A), priority 1 - Treatment lead responses to comments from 2015 consultation period - Treatment lead summary	2007-101A 20_TPPT_2016_Sep 25_TPPT_2016_Sep	ORMSBY
3.3 Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B), priority 1 - Treatment lead responses to comments from 2015 consultation period - Treatment lead summary	2007-101B 21_TPPT_2016_Sep 26_TPPT_2016_Sep	ORMSBY

AGENDA ITEM	DOCUMENT NO.	PRESENTER
3.4 Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107), priority 2 - Treatment lead responses to comments from 2015 consultation period - Treatment lead summary - Consideration of Cultivar/Variety Effects on Efficacy of Cold Treatments	2010-107 14_TPPT_2016_Sep 15_TPPT_2016_Sep 43_TPPT_2016_Sep	HALLMAN
4. Research Results – Cold tolerance of different <i>Ceratitis capitata</i> populations”		CHAIRPERSON
<ul style="list-style-type: none"> <i>Ceratitis capitata</i> population for tolerance to cold treatments – preliminary results 	08_TPPT_2016_Sep	HALLMAN
5. Review of draft Phytosanitary Treatments (PTs) Considering Comments from the 2014 Consultation	Link to 2014 compiled comments	CHAIRPERSON
5.1 Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> var. Navel and Valencia (2010-103), Priority 1 - Treatment lead responses to comments from 2014 consultation period - Treatment lead summary	2010-103 32_TPPT_2016_Sep 40_TPPT_2016_Sep	BOWMAN/ HALLMAN
5.2 Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. Solo (2009-109), Priority 2 - Treatment lead responses to comments from 2014 consultation period - Treatment lead summary	2009-109 11_TPPT_2016_Sep 10_TPPT_2016_Sep	HALLMAN
5.3 Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106), Priority 2 - Treatment lead responses to comments from 2014 consultation period - Treatment lead summary	2010-106 13_TPPT_2016_Sep 12_TPPT_2016_Sep	HALLMAN
5.4 Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus clementina</i> var. Clemenules (2010-102), Priority 2 - Treatment lead responses to comments from 2014 consultation period - Treatment lead summary	2010-102 27_TPPT_2016_Sep 28_TPPT_2016_Sep	WILLINK/ HALLMAN
6. Review of the draft Phytosanitary Treatments (PTs) Considering Objections Raised Before CPM-7 (2012) and CPM-9 (2014)	Link to objections received: - CPM-9 (2014) - CPM-7 (2012) 37_TPPT_2016_Sep_Rev1 41_TPPT_2016_Sep	CHAIRPERSON / Steward / IPPC Secretariat
6.1 Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> (2007-206A), Priority 1 - Treatment lead summary	2007-206A 29_TPPT_2016_Sep	WILLINK/ MYERS
6.2 Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus reticulata</i> x <i>C. sinensis</i> (2007-206B), Priority 1 - Treatment lead summary	2007-206B 30_TPPT_2016_Sep	WILLINK/ ORMSBY
6.3 Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus limon</i> (2007-206C), Priority 1 - Treatment lead summary	2007-206C 38_TPPT_2016_Sep	WANG/ ORMSBY

AGENDA ITEM	DOCUMENT NO.	PRESENTER
6.4 Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus paradisi</i> (2007-210), Priority 1 - Treatment lead summary	2007-210 16_TPPT_2016_Sep	YU/ MYERS
6.5 Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus reticulata</i> cultivars and hybrids (2007-212), Priority 1 - Treatment lead summary	2007-212_Rev1 31_TPPT_2016_Sep	ORMSBY
7. Drafting of ISPMs on requirements for phytosanitary treatment use		
7.1 Requirements for the use of fumigation as a phytosanitary measure (2014-004) – Priority 1 - Steward's summary - Environmental & implementation issues - Reference: Balock and Lindgren, 1951 - Reference: APPPC RSPM N° 10 - Reference: IPPC Style guide	2014-004 23_TPPT_2016_Sep 34_TPPT_2016_Sep 35_TPPT_2016_Sep Link to IPPC 2016-02 Style Guide	WANG/ORMSBY
8. Follow-up actions from IPPC bodies		CHAIRPERSON
8.1 2016 Standards Committee Working Group (SC-7): <ul style="list-style-type: none"> Draft revisions to ISPM 15: Draft revisions to ISPM 15 (Regulation of wood packaging material in international trade) - Annex 1 and 2 for inclusion of the phytosanitary treatment Sulphuryl fluoride fumigation of wood packaging material (2006-010A) and the revision of the dielectric heating section in Annex 1 of ISPM 15 (2006-010B) Comments for consideration by the TPPT 	06_TPPT_2016_Sep_Rev1 33_TPPT_2016_Sep Link to compiled comments Link to SC-7 2016 meeting report	ROSSEL / ORMSBY / MYERS
8.2 2016 May Standards Committee: <ul style="list-style-type: none"> Discussion on the term "process load" 	09_TPPT_2016_Sep Link to SC May 2016 meeting report	HALLMAN
9. TPPT working procedures and research recommendations		CHAIRPERSON
9.1 Estimated numbers of treated pests using both direct and modified (formula) calculation (and the document on "Instructions to assist NPPOs and RPPOs in proper and complete treatment submissions")	05_TPPT_2016_Sep	ORMSBY
9.2 Review of TPPT working procedures – IPPC Manual for Standard Setting - Annotated template for phytosanitary treatments	Link to IPPC Manual for Standard Setting 2015-2016 39_TPPT_2016_Sep	ROSSEL / MOLLER
10. Liaison		
<ul style="list-style-type: none"> Phytosanitary Measures Research Group (PMRG) 	Link to PMRG page	HALLMAN
<ul style="list-style-type: none"> Ozone Secretariat (Vienna Convention and Montreal Protocol / United Nations Environment Programme (UNEP)) 	Link to Ozone Secretariat website	WILLINK
11. Overview of the TPPT work programme		CHAIRPERSON
<ul style="list-style-type: none"> General overview, SWOT analysis and next steps 	(presentation)	MOREIRA / CHAIRPERSON / ROSSEL

AGENDA ITEM	DOCUMENT NO.	PRESENTER
<ul style="list-style-type: none"> Status of Phytosanitary Treatments (PTs) and draft ISPMs under the TPPT work programme 	07_TPPT_2016_Sep Link to LOT	MOREIRA / ALL
<ul style="list-style-type: none"> Methyl Bromide and Sulphuryl Fluoride Fumigation for <i>Chlorophorus annularis</i> in bamboo - Reference: <i>Barak et al. 2009</i> - Reference: <i>Daojian et al. 2010</i> 	17_TPPT_2016_Sep 18_TPPT_2016_Sep 19_TPPT_2016_Sep	YU
<ul style="list-style-type: none"> TPPT Work Plan: 2016-2017 	(To be developed at the meeting)	MOREIRA / ALL
<ul style="list-style-type: none"> Date and location of next meeting 		CHAIRPERSON
12. Recommendations to the SC		CHAIRPERSON
13. Other business		CHAIRPERSON
14. Close of the meeting		CHAIRPERSON
<ul style="list-style-type: none"> Evaluation of the meeting process Close 		MOREIRA CHAIRPERSON

Appendix 02: Documents List

DOCUMENT NO.	AGENDA ITEM	DOCUMENT TITLE
2007-114	3.1	Heat treatment of wood using dielectric heating (2007-114), priority 1
2007-101A	3.2	Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A), priority 1
2007-101B	3.3	Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B), priority 1
2010-107	3.4	Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107), priority 2
2010-103	5.1	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> var. Navel and Valencia (2010-103), Priority 1
2009-109	5.2	Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. Solo (2009-109), Priority 2
2010-106	5.3	Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106), Priority 2
2010-102	5.4	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus clementina</i> var. Clemenules (2010-102), Priority 2
2007-206A	6.1	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> (2007-206A), Priority 1
2007-206B	6.2	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus reticulata</i> x <i>C. sinensis</i> (2007-206B), Priority 1
2007-206C	6.3	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus limon</i> (2007-206C), Priority 1
2007-210	6.4	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus paradisi</i> (2007-210), Priority 1
2007-212_Rev1	6.5	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus reticulata</i> cultivars and hybrids (2007-212), Priority 1
2014-004	7.1	Requirements for the use of fumigation as a phytosanitary measure (2014-004), Priority 1
01_TPPT_2016_Sep	01.	Agenda
02_TPPT_2016_Sep	02	Document List
03_TPPT_2016_Sep	2	Participants List
04_TPPT_2016_Sep	2	Local Information
05_TPPT_2016_Sep	9.1	Estimated numbers of treated pests using both direct and modified (formula) calculation (and the document on "Instructions to assist NPPOs and RPPOs in proper and complete treatment submissions")

DOCUMENT NO.	AGENDA ITEM	DOCUMENT TITLE
06_TPPT_2016_Sep_Rev1	8.1	2016 Standards Committee Working Group (SC-7): Draft revisions to ISPM 15: Draft revisions to ISPM 15 (Regulation of wood packaging material in international trade) - Annex 1 and 2 for inclusion of the phytosanitary treatment Sulphuryl fluoride fumigation of wood packaging material (2006-010A) and the revision of the dielectric heating section in Annex 1 of ISPM 15 (2006-010B)
07_TPPT_2016_Sep	11	Status of Phytosanitary Treatments (PTs) and draft ISPMs under the TPPT work programme
08_TPPT_2016_Sep	04	<i>Ceratitis capitata</i> population for tolerance to cold treatments – preliminary results
09_TPPT_2016_Sep	8.2	2016 May Standards Committee: - Discussion on the term “process load”
10_TPPT_2016_Sep	5.2	Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. Solo (2009-109), Priority 2 - Treatment lead summary
11_TPPT_2016_Sep	5.2	Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. Solo (2009-109), Priority 2 - Treatment lead responses to comments from 2014 consultation period
12_TPPT_2016_Sep	5.3	Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106), Priority 2 - Treatment lead summary
13_TPPT_2016_Sep	5.3	Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106), Priority 2 - Treatment lead responses to comments from 2014 consultation period
14_TPPT_2016_Sep	3.4	Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107), priority 2 - Treatment lead responses to comments from 2015 consultation period
15_TPPT_2016_Sep	3.4	Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107), priority 2 - Treatment lead summary
16_TPPT_2016_Sep	6.4	Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus paradisi</i> (2007-210), Priority 1 - Treatment lead summary
17_TPPT_2016_Sep	11	MeBr and SF Fumigation for <i>Chlorophorus annularis</i> in bamboo commodity
18_TPPT_2016_Sep	11	MeBr and SF Fumigation for <i>Chlorophorus annularis</i> in bamboo commodity - Reference: Barak et al. 2009
19_TPPT_2016_Sep	11	MeBr and SF Fumigation for <i>Chlorophorus annularis</i> in bamboo commodity Reference: Daojian et al. 2010
20_TPPT_2016_Sep	3.2	Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A), priority 1 - Treatment lead responses to comments from 2015 consultation period
21_TPPT_2016_Sep	3.3	Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B), priority 1 - Treatment lead responses to comments from 2015 consultation period

DOCUMENT NO.	AGENDA ITEM	DOCUMENT TITLE
22_TPPT_2016_Sep	3.1	<i>Heat treatment of wood using dielectric heating (2007-114), priority 1</i> - Treatment lead responses to comments from 2015 consultation period
23_TPPT_2016_Sep	7.1	<i>Requirements for the use of fumigation as a phytosanitary measure (2014-004) – Priority 1</i> - Steward's summary
24_TPPT_2016_Sep	3.1	<i>Heat treatment of wood using dielectric heating (2007-114), priority 1</i> - Treatment lead summary
25_TPPT_2016_Sep	3.2	<i>Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A), priority 1</i> - Treatment lead summary
26_TPPT_2016_Sep	3.3	<i>Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B), priority 1</i> - Treatment lead summary
27_TPPT_2016_Sep	5.4	<i>Cold treatment for Ceratitis capitata on Citrus clementina var. Clemenules (2010-102), Priority 2</i> - Treatment lead responses to comments from 2014 consultation period
28_TPPT_2016_Sep	5.4	<i>Cold treatment for Ceratitis capitata on Citrus clementina var. Clemenules (2010-102), Priority 2</i> - Treatment lead summary
29_TPPT_2016_Sep	6.1	<i>Cold treatment for Ceratitis capitata on Citrus sinensis (2007-206A), Priority 1</i> - Treatment lead summary
30_TPPT_2016_Sep	6.2	<i>Cold treatment for Ceratitis capitata on Citrus reticulata x C. sinensis (2007-206B), Priority 1</i> - Treatment lead summary
31_TPPT_2016_Sep	6.5	<i>Cold treatment for Ceratitis capitata on Citrus reticulata cultivars and hybrids (2007-212), Priority 1</i> - Treatment lead summary
32_TPPT_2016_Sep	5.1	<i>Cold treatment for Ceratitis capitata on Citrus sinensis var. Navel and Valencia (2010-103), Priority 1</i> - Treatment lead responses to comments from 2014 consultation period
33_TPPT_2016_Sep	8.1	2016 Standards Committee Working Group (SC-7): • Draft revisions to ISPM 15: (2006-010A) and (2006-010B): <i>Comments for consideration on the phytosanitary treatment sulphuryl fluoride fumigation for control of pinewood nematode</i>
34_TPPT_2016_Sep	7.1	7.1 Requirements for the use of fumigation as a phytosanitary measure (2014-004) – Priority 1 - Reference: Balock and Lindgren, 1951
35_TPPT_2016_Sep	7.1	7.1 Requirements for the use of fumigation as a phytosanitary measure (2014-004) – Priority 1 - Reference: APPPC RSPM No 10
36_TPPT_2016_Sep	3.1	<i>Heat treatment of wood using dielectric heating (2007-114), priority 1</i> - Reference: Dubey et al 2016
37_TPPT_2016_Sep_Rev1	06	TPPT responses to formal objections from CPM-9 (2014)

DOCUMENT NO.	AGENDA ITEM	DOCUMENT TITLE
38_TPPT_2016_Sep	6.3	Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus limon</i> (2007-206C), Priority 1 - Treatment lead summary
39_TPPT_2016_Sep	9.2	Annotated template for phytosanitary treatments
40_TPPT_2016_Sep	5.1	Treatment lead summary: Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus sinensis</i> var. Navel and Valencia (2010-103)
41_TPPT_2016_Sep	06	<i>Summary of formal objections received before CPM-9 (2014) and CPM-7 (2012)</i>
42_TPPT_2016_Sep	3.1	Heat treatment of wood using dielectric heating (2007-114), priority 1 - Reference: Tubajika et al 2006
43_TPPT_2016_Sep	3.4	Consideration of Cultivar/Variety Effects on Efficacy of Cold Treatments

Links:

CONTENT	AGENDA ITEM	LINKS:
Review of 2015 Consultation Period Comments on Draft Phytosanitary Treatments (PTs)	03	Link to 2015 compiled comments
Review of 2014 Consultation Period Comments on Draft Phytosanitary Treatments (PTs)	05	Link to 2014 compiled comments
Review of the revised draft Phytosanitary Treatments (PTs) after Formal Objections	06	Link to formal objections received: - CPM-9 (2014) - CPM-7 (2012)
IPPC Style Guide	7.1	IPPC Style Guide
2016 Standards Committee Working Group (SC-7): • Draft revisions to ISPM 15: Draft revisions to ISPM 15 (Regulation of wood packaging material in international trade) - Annex 1 and 2 for inclusion of the phytosanitary treatment Sulphuryl fluoride fumigation of wood packaging material (2006-010A) and the revision of the dielectric heating section in Annex 1 of ISPM 15 (2006-010B)	8.1	Link to compiled comments
Standards Committee Working Group (SC-7) 2016 meeting report	8.1	SC-7 2016 report
Standards Committee (SC) May 2016 meeting report	8.2	SC May 2016 meeting report
Review of TPPT working procedures – IPPC Manual for Standard Setting	9.2	Link to IPPC Manual for Standard Setting 2015-2016
Liaisons: • Phytosanitary Measures Research Group (PMRG)	10	Link to PMRG page (see also report of the PTTEG: click here)

CONTENT	AGENDA ITEM	LINKS:
Liaisons: • Ozone Secretariat (Vienna Convention and Montreal Protocol / United Nations Environment Programme (UNEP))	10	Link to Ozone Secretariat website
Overview of the TPPT work programme • Status of Phytosanitary Treatments (PTs) and draft ISPMs under the TPPT work programme	11	Link to 2016-06 List of topics for IPPC standards
TPPT public page (meeting reports and others)	-	Technical Panel on Phytosanitary Treatments (TPPT)
ISPM 28 (<i>Phytosanitary treatments for regulated pests</i>)	-	ISPM 28
Specification TP3: TPPT	-	Specification TP3
Adopted ISPMs	-	Adopted standards

Appendix 03: References List

- Barak, A., Messenger, M., Neese, P., Thoms, E. & Fraser, I.** 2010. Sulfuryl fluoride treatment as a quarantine treatment for emerald ash borer (Coleoptera: Buprestidae) in ash logs. *Journal of Economic Entomology*, 103(3): 603–611.
- Barak, A., Wang, Y., Zhan, G., Wu, Y., Xu, L. & Huang, Q.** 2006. Sulfuryl fluoride as a quarantine treatment for *Anoplophora glabripennis* (Coleoptera: Cerambycidae) in regulated wood packing material. *Journal of Economic Entomology*, 99(5): 1628–1635.
- Bonifacio L., Inácio, M.L., Sousa, E., Buckley, S. & Thoms, E.M.** 2013. Complementary studies to validate the proposed fumigation schedules of sulfuryl fluoride for inclusion in ISPM No. 15 for the eradication of pine wood nematode (*Bursaphelenchus xylophilus*) from wood packaging material. Report. Lisbon, Instituto Nacional de Investigação Agrária e Veterinária (ex-INRB). 60 pp.
- De Lima, C.P.E., A.J. Jessup, I. Cruickshank, C.J. Walsh and E.R. Mansfield.** 2007. Cold disinfestation of citrus (*Citrus* spp.) for Mediterranean fruit fly (*Ceratitis capitata*) and Queensland fruit fly (*Bactrocera tryoni*) (Diptera: Tephritidae). *New Zealand Journal of Crop and Horticultural Science* 35: 39-50.
- Dubey, M., Janowiak, J., Mack, R., Elder, P. & Hoover, K.** 2016. Comparative study of radio frequency and microwave heating for phytosanitary treatment of wood. *European Journal of Wood and Wood Products*, (Online first) 1-10.
- Hallman, G.J. & Mangan, R.L.** 1997. Concerns with temperature quarantine treatment research. In G.L. Obenauf, ed. *Proceedings of the 1997 Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reduction*. San Diego, CA, 3–5 November 1997, pp. 79-1–79-4. Fresno, CA, Methyl Bromide Alternatives Outreach. Available at <https://mbao.org/static/docs/confs/1997-sandiego/papers/079hallman.pdf> (last accessed 15 April 2016).
- Heather, N. W., Corcoran, R. J. & Kopittke, R. A.** 1997. Hot air disinfestation of Australian ‘Kensington’ mangoes against two fruit flies (Diptera: Tephritidae). *Postharvest Biology and Technology* 10: 99-105.
- Santaballa, E., Laborda, R. & Cerdá, M.** 2009. Quarantine cold treatment against *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) to export clementine mandarins to Japan. *Boletín de Sanidad Vegetal Plagas*, 35: 501–512 (in English).
- Santaballa, E., Laborda, R. & Dalmau, A.** 1995. *Report of quarantine cold treatment to control Ceratitis capitata (Wied) to export oranges to Japan*. València, Spain, Universidad Politécnica de Valencia.
- Cerdá, M., Santaballa, E. & Dalmau, A.** 1997. *Report of quarantine cold treatment to control Ceratitis capitata (Wied) to export Salustiana oranges to Japan*. Valencia, Spain, Universidad Politécnica de Valencia.
- Sousa, E., Bonifácio, L., Naves, P., Lurdes Silva Inácio, M., Henriques, J., Mota, M., Barbosa, P., Espada, M., Wontner-Smith, T., Cardew, S., Drinkall, M.J., Buckley, S. & Thoms, M.E.** 2010. *Studies to validate the proposed fumigation schedules of sulfuryl fluoride for inclusion in ISPM No. 15 for the eradication of pine wood nematode (Bursaphelenchus xylophilus) from wood packaging material*. Report. Lisbon, Instituto Nacional de Investigação Agrária e Veterinária (ex-INRB). 20 pp.
- Sousa, E., Naves, P., Bonifácio, L., Henriques, J., Inácio, M.L. & Evans, H.** 2011. Assessing risks of pine wood nematode *Bursaphelenchus xylophilus* transfer between wood packaging by simulating assembled pallets in service. *EPPO Bulletin*, 41: 423–431.
- Tubajika, K.M., Janowiak, J.J., Mack, R. & Hoover, K.** 2007. Efficacy of radio frequency treatment and its potential for control of sapstain and wood decay fungi on red oak, poplar, and southern yellow pine wood species. *Journal of Wood Science*, 53: 258–263.
- Willink, E., Gastaminza, G., Gramajo, M.C., Salvatore, A., Villagrán, M.E., Carrizo, B., Macián, A., Avila R. & Favre, P.** 2007a. Estudios básicos para el desarrollo de tratamientos cuarentenarios con frío para *Ceratitis capitata* y *Anastepha fraterculus* en cítricos de Argentina.

In Moscas de los frutos y su relevancia cuarentenaria en la citricultura del Noroeste Argentino: once años de investigaciones 1996–2007. E. Willink, G. Gastaminza, L. Augier y B. Stein, editores. Las Talitas, Tucumán Argentina. Available at <http://www.eeaoc.org.ar> (last accessed on 18 September 2016).

Willink, E., Gastaminza, G., Gramajo, M.C., Salvatore, A., Villagrán, M.E., Carrizo, B., Macián, A., Avila, R., Favre, P., Toledo, S., García Degano, M.F., Socias, M.G. & Oviedo, A. 2007b. Tratamientos con frío para el control de *Ceratitis capitata* y *Anastrepha fraterculus* para la exportación de cítricos. *In* Moscas de los frutos y su relevancia cuarentenaria en la citricultura del Noroeste Argentino: once años de investigaciones 1996–2007. E. Willink, G. Gastaminza, L. Augier y B. Stein, editores. Las Talitas, Tucumán Argentina. Available at <http://www.eeaoc.org.ar> (last accessed on 18 September 2016).

Appendix 04: Participants list

A check (✓) in column 1 indicates confirmed attendance at the meeting.

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Appendix 05: Comparison of three populations of *Ceratitis capitata* (medfly) for tolerance to cold phytosanitary treatment

(Prepared by Mr Guy Hallman)

- [1] **CONCLUSION:** Cold tolerance in three populations of *Ceratitis capitata* generally increased as the insect developed; therefore, the 3rd instar is the most tolerant of the stages that are found in fruit. The three populations did not differ appreciably in cold tolerance.
- [2] **INTRODUCTION:** Some cold phytosanitary treatment proposals for fruits at risk of infestation with the Mediterranean fruit fly, *Ceratitis capitata*, are being held up because of concern expressed in country comments that different populations of the pest may respond differently to the treatment, making it difficult to consider establishing treatments that are applicable across populations. For example, De Lima et al. (2007) in Australia found the 2nd instar to be the most cold tolerant while researchers in other countries found the 3rd instar to be the most cold tolerant. It is not possible to compare cold tolerance per se among these various studies because they were done at different temperatures with different methodologies, bioassays, and interpretations. This study was conducted to compare populations of *C. capitata* from various countries that use cold treatment to export citrus and determine if they differ in most tolerant stage or cold tolerance per se.
- [3] **Note:** This is a preliminary analysis. Data from the final trials are still being collected, so there may be slight differences in what is reported here and the final analysis, which will later be organized for publication. That said, I believe that the general conclusions as reported today reflect the data accurately.

METHODOLOGY

- [4] ***Ceratitis capitata*:** Wild populations of *C. capitata* were obtained from collaborators in citrus-growing regions of Argentina, Australia, and Spain, three countries that use cold to disinfest citrus of *C. capitata*, and sent to the Insect Pest Control laboratories of FAO/IAEA in Seibersdorf, Austria. The wild, fruit-collected populations were reared on the standard *C. capitata* diet for 2-3 generations to increase numbers before being used in the research. The research was conducted within a year of obtaining the wild flies.
- [5] **Fruit:** Tangerines were obtained from local markets in Vienna and differed in type and origin, depending on availability, over the year of the study. Besides being almost impossible to control, we feel that the variability in host contributes to the robustness of the study.
- [6] **Infestation:** The infestation technique used was as close to the natural situation as could be done in Seibersdorf (FAO/IAEA, Austria) to reduce as much as possible the number of assumptions that could affect efficacy. Several thousand flies were placed in screen cages (0.44 x 0.44 x 0.44 m) at $26 \pm 0.2^{\circ}\text{C}$ and fed standard adult diet until they reached ovipositional age. Approximately 20 tangerines were placed in the cages for 2 to 4 h with the objective of obtaining infestation levels that would not result in the fruit decomposing before the late 3rd instar developed. This infestation technique, although as close to the natural setting as possible, results in uneven infestations; e.g., often fruit were not infested. However, we feel that this uneven infestation increases the robustness of the results.
- [7] **Most tolerant stage:** The three populations were reared on tangerines at $26.0 \pm 0.2^{\circ}\text{C}$, and often at 11 d after infestation 3rd instars were beginning to emerge from the fruit. Therefore, tangerines infested for no more than 10 d were used in the research. In order to observe any changes in cold tolerance among the populations in increments less than distinct stages, infested tangerines from all days between 0-10 after infestation were placed in a cold treatment chamber (model SE-2000-4, Thermotron Industries, Holland Michigan, USA; inside dimensions 1.22 x 1.22 x 1.32 m) at $1.0 \pm$

0.1° C for several days until a discriminating dose (in days) was found. That is, a dose that would result in complete mortality for some of the ages but < 5 % mortality for the most cold tolerant ages. That dose was decided at 9 d. Only fruit that were not rotting or with fruit fly emergence holes when they were to be placed in the treatment chamber were used in the research.

- [8] **Most tolerant population:** The three populations were studied at the same time so that comparisons for tolerance among populations could be made using the same data.
- [9] **Bioassay:** As with the infestation procedure, the bioassay was done simulating the natural situation. That is, it was assumed that the treatment must prevent all live insects at the time that it might be inspected by plant protection authorities upon import. It was further assumed that inspectors would most likely find 3rd instars, not earlier stages. For example, I have been told by APHIS that in the USA it can be concluded almost without exception that any time a live tephritid has been found it was a 3rd instar. That said, other national plant protection organizations may routinely inspect for earlier stages, and the technique used here would not shed light on when eggs and early instars died if they were alive upon removal from the treatment chamber but died before reaching 3rd instar.
- [10] To obtain this common denominator of prevention of live 3rd instars when any stage is treated, control and treated fruits were examined for dead and live insects after those insects would have been at 26° C for a total of 11 days. E.g., insects treated when they were 5 d old were evaluated 6 d after removal from the cold chamber and the control was evaluated 6 d after the treated fruit were placed in the cold chamber. Evaluation at 11 d allows for the oldest insects when treated (10 d-old) to remain at 26° C and revive from cold stupor for 1 d before being evaluated.
- [11] Insects were considered alive if they were found to move upon inspection or pupariated later regardless of prior movement. Larvae that were the colour of live insects but were not moving were saved for further evaluation until they were obviously dead or live.
- [12] For fruits with 3rd instars upon treatment, a non-cold treated control consisting of a few fruits was used to determined natural (non-cold induced) mortality as 3rd instars could be reliably extracted from fruit upon examination. Eggs and early instars cannot be reliably extracted from fruit, so there is no estimate of natural mortality in these stages; it is assumed that natural mortality among eggs and early instars is comparable to natural mortality among 3rd instars. To obtain an estimate of the number of insects treated, and because infestation varied so much among individual fruits, one-half to one-third of the fruits were not treated but used to estimate numbers present in treated fruits. These fruits were held for 11 days after infestation and dissected to count 3rd instars.

RESULTS

- [13] Table 1 presents the results of the tests. In general, cold tolerance increases for all three populations as they age. Thus, 3rd instars were the most cold tolerant for all three populations. The stages roughly coincide with the following ages: 0-2: egg; 2-5, 1st instar; 5-8, 2nd instar, and 8-10, 3rd instar. Note the overlap among stages; i.e., at 5 d there are 1st and 2nd instars together. Note that there is a detectable increase in cold tolerance for all three populations at 4 d of age (1st instar) followed by a subsequent decrease in cold tolerance at 5 and 6 d of age. However, it does not approach the level of cold tolerance of 3rd instars, hence, can be ignored for practical purposes. Note a few survivors for some of the populations, but not all, at 3, 5, and 6 d as well. These may be simply be artefacts of the dose used being close to 100 % mortality at those ages and have no further significance. The egg stage is clearly the most cold susceptible when measured as survival to the 3rd instar. Natural mortality among 3rd instars was negligible (mean < 1 %), and data are not corrected for it.

Table 1. Mean percent (\pm SEM) survival following cold treatment at $1.0 \pm 0.1^\circ \text{C}$ for 9 days for 0-10 day old *Ceratitis capitata* from three populations infesting tangerines.

Fly age (days from oviposition)	Mean % \pm SEM survival of population from		
	Australia	Argentina	Spain
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0.52 ± 0.35	0.40 ± 0.27
4	1.29 ± 1.58	1.55 ± 1.29	2.11 ± 1.80
5	0	0.44 ± 0.54	0
6	0	0.35 ± 0.40	0
7	1.90 ± 2.05	2.75 ± 2.51	0.37 ± 0.52
8	2.22 ± 1.40	3.06 ± 2.82	0.27 ± 0.38
9	4.97 ± 3.42	3.75 ± 3.03	3.11 ± 3.80
10	4.74 ± 1.96	4.44 ± 3.05	4.28 ± 4.26

DISCUSSION

[14] The results of this study performed using methods of infestation and bioassays that are as close as possible to real-world treatment and inspection, show that the 3rd instar is the most cold tolerant and that the three populations of *C. capitata* do not differ appreciably in cold tolerance. This supports the contention that source of *C. capitata* need not be considered in developing cold phytosanitary treatments. However, there are a number of caveats:

- (1) Because the insects were reared under the same conditions in the same place it is possible that they evolved to have the same cold tolerance. Hard to test.
- (2) The resulting similarity in cold tolerance could be due to a physiological (not genetic) response to identical rearing. This could be tested if we knew the factors to test!
- (3) The study was done with only three populations. Could do others.
- (4) The study was only done at 1°C . Could do other temperatures.
- (5) The study was only done in one host fruit. Could do other fruit.

[15] All studies in the literature infesting fruit except one found the 3rd instar of *C. capitata* to be the most cold tolerant. De Lima et al. (2007) found the 2nd instar to be more tolerant than the 3rd. De Lima et al. (2007) is a quite thorough, detailed study with two treatment temperatures and 5 citrus types tested; I cannot find fault with it. Two major differences between the present study and De Lima et al. (2007) are:

- (6) they infested fruit via injection of eggs 10-15 mm below the fruit surface into the pulp while the female lays eggs barely through the peel, and
- (7) bioassay was done by counting subsequent normal puparia formed after removal from the treatment chamber. Some insects may have been alive after the fruit were removed from the chamber but were not counted unless they emerged from the fruit and formed normal puparia.

[16] However, I do not see how these differences could lead to 2nd instars seeming more cold tolerant than 3rd instars.

[17] In conclusion, it may not be possible to test all assumptions that could affect efficacy among the populations to a degree that removes all major concerns; meanwhile, regulatory decisions must be made.

Reference cited

- [18] **De Lima, C.P.E., A.J. Jessup, I. Cruickshank, C.J. Walsh and E.R. Mansfield.** 2007. Cold disinfestation of citrus (*Citrus* spp.) for Mediterranean fruit fly (*Ceratitis capitata*) and Queensland fruit fly (*Bactrocera tryoni*) (Diptera: Tephritidae). New Zealand Journal of Crop and Horticultural Science 35: 39-50.

Appendix 06: Recalculations of treatment efficacy**Phytosanitary treatment: Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* var. Solo (2009-109)**

2009-109	46°C/70 mins	Confirmatory Controls – Oriental Fruit Fly		
TREATMENT UNIT	NUMBER OF FRUIT PER TRAY	NUMBER OF PUPAE	TOTAL NUMBER OF PUPAE	AVERAGE PER FRUIT
1	1	332	332	332.00
2	1	354	354	354.00
3	1	304	304	304.00
4	1	338	338	338.00
5	1	312	312	312.00
6	1	286	286	286.00
7	1	246	246	246.00
8	1	393	393	393.00
9	1	309	309	309.00
10	1	232	232	232.00
11	1	330	330	330.00
12	1	325	325	325.00
13	1	293	293	293.00
14	1	295	295	295.00
15	1	370	370	370.00
16	1	293	293	293.00
17	1	326	326	326.00
18	1	436	436	436.00
19	1	241	241	241.00
20	1	318	318	318.00
Totals	20	6333	6333	316.65
Average (\pm SE x 1.645) = 316.65 \pm 80.93 = 235.72				
Number of Tested Fruit = 80				
Estimated Number of Treated FF (95% confidence) = 18,857				
Calculated level of efficacy (95% confidence) = 99.9841%				

Phytosanitary treatment: Cold treatment for *Ceratitis capitata* on *Citrus clementina* var. Clemenules (2010-102)

2010-102	2°C/16 days	Confirmatory Controls - MedFly		
TREATMENT UNIT	NUMBER OF FRUIT PER TRAY	NUMBER OF PUPAE	TOTAL NUMBER OF PUPAE	AVERAGE PER FRUIT
1	294	4527	4527	15.40
2	286	4118	4118	14.40
3	302	4167	4167	13.80
Totals	882	12812	12812	14.53
Adjusted Average per Fruit (\pm SE x (SQR(1+1/r))) = 14.53 \pm 0.93 = 13.60				
Number Tested Fruit = 2202				
Estimated Number of Treated FF (95% confidence) = 29,940				
Calculated level of efficacy (95% confidence) = 99.9900%				

Phytosanitary treatments: Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A) and Cold treatment for *Ceratitis capitata* on *Citrus reticulata* x *C. sinensis* (2007-206B)

From De Lima et al. 2007 updated to combine cultivars for MedFly only (Orange = Valencia + Navel, Tangor = Ellendale + Murcott)					
Calculations using adjusted averages (mean + (STD * SQR(1 + 1/r)))					
Test Fruit	Treatment Temperature: 2°C				
	Days treated	No. of Insects treated	No. of survivors	Efficacy Level	1 Survivor in:
Orange	18	296,853	0	99.9990%	98,951
Tangor	18	229,033	0	99.9987%	76,344
Lemon	16	120,482	0	99.9975%	40,161
Test Fruit	Treatment Temperature: 3°C				
	Days treated	No. of Insects treated	No. of survivors	Efficacy Level	1 Survivor in:
Orange	20	281,822	0	99.9989%	93,941
Tangor	20	231,801	0	99.9987%	77,267
Lemon	18	111,157	0	99.9973%	37,052

Appendix 07: TPPT 2016-2017 work plan

2016-2017 Phytosanitary treatments (PTs) and draft ISPMs on “Treatment requirements” overall management			
Goals: a) Track, manage and ensure high quality PTs and draft ISPMs b) Overall management of 13 draft PTs and 5 draft ISPMs c) Analysis of treatment submissions			
Action 1. Draft PTs for recommendation to the Standards Committee (SC) for adoption Goal: To ensure a transparent and inclusive process for the adoption of draft PTs			
2016	Responsible	Deadline to revise the draft	Notes
1. Draft Annex to ISPM 28: Heat treatment of wood using dielectric heating (2007-114)	ORMSBY	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
2. Draft Annex to ISPM 28: Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A)	ORMSBY	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
3. Draft Annex to ISPM 28: Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B)	ORMSBY	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
4. Draft Annex to ISPM 28: Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107)	HALLMAN	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
5. Draft Annex to ISPM 28: Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106)	HALLMAN	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
6. Draft Annex to ISPM 28: Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus clementina</i> var. <i>Clemenules</i> (2010-102) ³⁶	WILLINK/HALLMAN	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by

³⁶ The TPPT proposed title change from “Cold treatment for *Ceratitis capitata* on *Citrus clementina* var. *Clemenules* (2010-102)” to “Cold treatment for *Ceratitis capitata* on *Citrus clementina* (2010-102)” due to no varietal / cultivar differences.

			CPM-12 (2017)
7. Draft Annex to ISPM 28: Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> (2007-206A) ³⁷	WILLINK/MYERS (BOWMAN/HALLMAN)	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
8. Draft Annex to ISPM 28: Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus reticulata</i> x <i>C. sinensis</i> (2007-206B)	WILLINK/ORMSBY	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
9. Draft Annex to ISPM 28: Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus limon</i> (2007-206C)	WANG/ORMSBY	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
10. Draft Annex to ISPM 28: Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus paradisi</i> (2007-210)	YU/MYERS	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
11. Draft Annex to ISPM 28: Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus reticulata</i> cultivars and hybrids (2007-212) ³⁸	ORMSBY	16 September 2016	TPPT 2016-09 recommended the draft to the SC for adoption by CPM-12 (2017)
2017	Responsible	Deadline to revise the draft	Notes
1. Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. Solo (2009-109)	HALLMAN	-	Tentative: research results to be discussed in virtual meeting in 25 April and face to face meeting in July 2017.
2. Requirements for the use of temperature treatments as phytosanitary measures (2014-005)	WILLINK	01 February 2016	Draft ISPM submitted to first consultation in July 2016. The SC-7 in 2017 will revise the draft and possible recommend it for second consultation period in July 2017. Tentative: SC Nov 2017 to recommend for adoption by CPM-13 (2018)

³⁷ The draft PT “Cold treatment for *Ceratitis capitata* on *Citrus sinensis* var. Navel and Valencia (2010-103)” was recommended to be removed from the TPPT work programme and the treatment schedule to be included in the draft PT “Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A)” due to no varietal / cultivar differences.

³⁸ The TPPT proposed title change from “Cold treatment for *Ceratitis capitata* on *Citrus reticulata* cultivars and hybrids (2007-212)” to “Cold treatment for *Ceratitis capitata* on *Citrus reticulata* (2007-212)” due to no varietal / cultivar differences.

Action 2: TPPT e forums			
Goal: To ensure a transparent and inclusive process for the development of high quality PTs			
2016	Responsible	Deadline	Notes
Responses to consultation comments on the draft annex to ISPM 28: Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106)	Secretariat	26 September - 04 October	The draft PT “Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> var. Navel and Valencia (2010-103)” was recommended to be removed from the TPPT work programme and the treatment schedule to be included in the draft PT “Cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> (2007-206A)” due to no varietal / cultivar differences.
Discussion on the term “Process load”	Secretariat	-	Deferred from 2016-09 TPPT meeting Secretariat to open TPPT e-forum
Estimated numbers of treated pests using both direct and modified (formula) calculation (and the document on “Instructions to assist NPPOs and RPPOs in proper and complete treatment submissions”)	Secretariat	-	Deferred from 2016-09 TPPT meeting Secretariat to open TPPT e-forum

Action 3: Consultations on draft ISPMs: 1 July – 30 November 2017			
Goal: To ensure a transparent and inclusive process for the development of high quality PTs (tentative recommendations)			
2017	Responsible	Deadline to revise the draft	Notes
Second consultation			
Requirements for the use of temperature treatments as phytosanitary measures (2014-005)	WILLINK	01 February 2016	Draft ISPM submitted to first consultation in July 2016. The SC-7 in 2017 will revise the draft and possible recommend it for second consultation period in July 2017. Tentative: SC Nov 2017 to recommend for adoption by CPM-13 (2018)
First consultation			
Guidelines for the use of fumigation as a phytosanitary measure (2014-004)	WANG/ ORMSBY	01 February 2016	To be discussed in virtual meetings.

Action 4: TPPT virtual meetings scheduled			
Goal: To ensure a transparent and inclusive process for the development of high quality PTs			
2016	Responsible	Deadline to submit papers	Notes
26 October	Secretariat	14 October 2016	
<ul style="list-style-type: none"> Guidelines for the use of fumigation as a phytosanitary measure (2014-004) 	WANG/ ORMSBY		Deferred from 2016-09 TPPT meeting Tentative: Recommend for approval by the SC to 2017 first consultation
8 December	Secretariat	24 November 2016	
<ul style="list-style-type: none"> Guidelines for the use of fumigation as a phytosanitary measure (2014-004) 	WANG/ ORMSBY	-	Deferred from 2016-09 TPPT meeting Tentative: Recommend for approval by the SC to 2017 first consultation
2017	Responsible	Deadline to submit papers	Notes
23 February	Secretariat	9 February 2017	-
25 April	Secretariat	11 April 2017	-
17 October (tentative)	Secretariat	06 October 2017	-
12 December (tentative)	Secretariat	01 December 2017	-

Action 5: 2017 TPPT meeting (face to face meeting) tentative dates: 17 - 21 July 2017 to be hosted by IAEA in Vienna, Austria.

Goal: Discuss deeply the technical content of draft PTs and draft ISPMs, TPPT working procedures, as well as challenges and strengthens of the panel and review the TPPT work programme. Revision of treatment submissions.

Draft PTs, draft ISPMs and any other discussion paper to the meeting are due on 16 June 2017

Tentative draft PTs and ISPMs	Responsible	Deadline to revise the draft	Notes
Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> (2009-109)	HALLMAN	16 June 2016	Pending results
Requirements for the use of modified atmosphere treatments as a phytosanitary measure (2014-006), priority 2	MYERS	16 June 2017	Tentative: Recommendation to SC for adoption by CPM-14 (2019)
Requirements for the use of chemical treatments as a phytosanitary measure (2014-003), priority 3	ORMSBY/ BOWMAN	16 June 2017	Tentative: Recommendation to SC for adoption by CPM-14 (2019)
Requirements for the use of irradiation as a phytosanitary measure (Revision to ISPM 18) (2014-007), priority 3	PARKER/ HALLMAN	16 June 2017	Tentative: Recommendation to SC for adoption by CPM-14 (2019)

Appendix 08: Action points arising from the September 2016 TPPT meeting

	Action	Agenda Item	Responsible	Deadline
1.	The TPPT <i>agreed</i> to submit the responses to the 2015 first consultation comments for the draft Heat treatment of wood using dielectric heating (2007-114) to the SC for approval.	3.1	Secretariat	2016-10-12
2.	Heat treatment of wood using dielectric heating (2007-114) 2015 first consultation comments revised – back to secretariat	3.1	Treatment lead (ORMSBY)	2016-10-16
3.	The TPPT <i>agreed</i> to recommend the draft Heat treatment of wood using dielectric heating (2007-114) as modified in this meeting to the SC for approval for adoption by the CPM	3.1	Secretariat	2016-10-12
4.	The TPPT <i>invited</i> the Secretariat to update the annotated template for draft PTs with the guidance on “describe” provided in this section	3.1	Secretariat	2016-09-30
5.	The TPPT <i>invited</i> the SC to consider the implementation issues identified by the TPPT	3.1	Secretariat	(2016-10-12; SC May 2017)
6.	The TPPT <i>agreed</i> to submit the responses to the 2015 first consultation comments for the draft PT Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A) to the SC for approval	3.2	Secretariat	2016-10-12
7.	Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A) 2015 first consultation comments revised – back to secretariat	3.2	Treatment lead (ORMSBY)	2016-09-16
8.	The TPPT <i>agreed</i> to recommend the draft PT Sulfuryl fluoride fumigation of insects in debarked wood (2007-101A), as modified in this meeting, to the SC for approval for adoption by CPM	3.2	Secretariat	2016-10-12
9.	The TPPT <i>invited</i> the SC to consider the consultation comment requesting that all the documentation (calculations, CT schedules, etc.) supporting the TPPT decisions be made available publicly on the IPP	3.2	Secretariat	2016-10-12
10.	The TPPT <i>agreed</i> to submit the responses to the 2015 first consultation comments for the draft PT Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B) to the SC for approval	3.3	Secretariat	2016-10-12
11.	Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B) 2015 first consultation comments revised – back to secretariat	3.3	Treatment lead (ORMSBY)	2016-10-16
12.	The TPPT <i>agreed</i> to recommend the draft PT Sulfuryl fluoride fumigation of nematodes and insects in debarked wood (2007-101B), as modified in this meeting to the SC for approval for adoption by CPM	3.3	Secretariat	2016-10-12
13.	The TPPT <i>agreed</i> to submit the responses to the 2015 first consultation comments for the draft PT Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107) to the SC for approval	3.4	Secretariat	2016-10-12
14.	Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107) 2015 first consultation comments revised – back to secretariat	3.4	Treatment lead (HALLMAN)	2016-10-16

	Action	Agenda Item	Responsible	Deadline
15.	The TPPT <i>agreed</i> to recommend the draft PT Vapour heat treatment for <i>Bactrocera tryoni</i> on <i>Mangifera indica</i> (2010-107), as modified in this meeting, to the SC for approval for adoption by CPM	3.4	Secretariat	2016-10-12
16.	The TPPT <i>agreed</i> that there are no evidence to support varietal differences in <i>Mangifera indica</i> (mango) and to include a note on this in the IPPC Procedure manual for standard setting	3.4	Secretariat	2016-09-30
17.	The TPPT <i>invited</i> the SC to consider including a note on the submission form for phytosanitary treatments to encourage submitters to make all supporting documentation available publicly	3.4	Secretariat	Before call for phytosanitary treatments
18.	The TPPT <i>agreed</i> that, based on the study undertaken by Mr Guy HALLMAN, there is no evidence that different populations of <i>Ceratitis capitata</i> respond differently to cold treatments and <i>agreed</i> to update the appropriate sections of the IPPC Procedure manual for standard setting accordingly	4	Secretariat	2016-09-30
19.	The TPPT <i>agreed</i> to submit the responses to the 2014 first consultation comments for the draft <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> var. Navel and Valencia (2010-103) to the SC for approval	5.1	Treatment lead (BOWMAN)	2016-10-12
20.	The TPPT <i>agreed</i> to combine the schedule for the draft cold treatments for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> var. Navel and Valencia (2010-103) with the draft cold treatment for <i>Ceratitis capitata</i> on <i>Citrus sinensis</i> and <i>asked</i> the SC to take subject 2010-103 off the List of topics for IPPC standards accordingly	5.1	Secretariat	2016-10-12
21.	The TPPT <i>agreed</i> to add a note to the TPPT working procedures in the IPPC Procedure manual for standard setting regarding artificial infestation	5.1	Secretariat (ORMSBY)	2016-09-30
22.	The TPPT <i>invited</i> the SC to note the change in title from <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. Solo (2009-109) to <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> (2009-109)	5.2	Secretariat	(2016-10-12; SC Nov 2016)
23.	The TPPT <i>encouraged</i> the contracting party that had suggested possible <i>Bactrocera dorsalis</i> population differences in responses to heat to submit a full report on the data to the TPPT for further review.	5.2	Secretariat	No deadline set
24.	The TPPT <i>agreed</i> to submit the responses to the 2014 first consultation comments for the draft Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106) to the SC for approval	5.3	Secretariat	2016-10-12
25.	Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106) 2014 first consultation comments revised – back to secretariat	5.3	Treatment lead (HALLMAN)	2016-09-16
26.	The TPPT <i>agreed</i> to recommend the draft Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> (2010-106), as modified in this meeting, to the SC for approval for adoption by CPM	5.3	Secretariat	2016-10-12

	Action	Agenda Item	Responsible	Deadline
27.	The TPPT <i>invited</i> the SC to note the change in title of the draft PT from <i>Ceratitidis capitata</i> on <i>Citrus clementina</i> var. <i>Clemenules</i> (2010-102) to <i>Ceratitidis capitata</i> on <i>Citrus clementina</i> (2010-102)	5.4	Secretariat	(2016-10-12; SC Nov 2016)
28.	The TPPT <i>agreed</i> to submit the responses to the 2014 first consultation comments for the draft Cold treatment <i>Ceratitidis capitata</i> on <i>Citrus clementina</i> (2010-102) to the SC for approval	5.4	Secretariat	2016-10-12
29.	Cold treatment <i>Ceratitidis capitata</i> on <i>Citrus clementina</i> (2010-102) 2014 first consultation comments revised – back to secretariat	5.4	Treatment lead (WILLINK)	2016-09-16
30.	<i>Agreed</i> to recommend the draft Cold treatment <i>Ceratitidis capitata</i> on <i>Citrus clementina</i> (2010-102), as modified in this meeting, to the SC for approval for adoption by CPM	5.4	Secretariat	2016-10-12
31.	The TPPT <i>agreed</i> to submit the responses to the objection comments for the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus sinensis</i> (2007-206A) to the SC for approval	6.1	Secretariat	2016-10-12
32.	The TPPT <i>agreed</i> to recommend the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus sinensis</i> (2007-206A), as modified in this meeting, to the SC for approval for adoption by CPM	6.1	Secretariat	2016-10-12
33.	The TPPT <i>agreed</i> to submit the responses to the objection comments for the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus sinensis</i> (2007-206A) to the SC for approval	6.2	Secretariat	2016-10-12
34.	The TPPT <i>agreed</i> to recommend the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus reticulata</i> x <i>C. sinensis</i> (2007-206B), as modified in this meeting, to the SC for approval for adoption by CPM	6.2	Secretariat	2016-10-12
35.	The TPPT <i>agreed</i> to submit the responses to the objection comments for the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus limon</i> (2007-206C) to the SC for approval	6.3	Secretariat	2016-10-12
36.	The TPPT <i>agreed</i> to recommend the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus limon</i> (2007-206C), as modified in this meeting, to the SC for approval for adoption by CPM	6.3	Secretariat	2016-10-12
37.	The TPPT <i>invited</i> the SC to consider the implementation issues identified by the TPPT	6.3	Secretariat	(2016-10-12; SC May 2017)
38.	The TPPT <i>agreed</i> to submit the responses to the objection comments for the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus paradisi</i> (2007-210) to the SC for approval	6.4	Secretariat	2016-10-12
39.	The TPPT <i>agreed</i> to recommend the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus paradisi</i> (2007-210), as modified in this meeting, to the SC for approval for adoption by CPM	6.4	Secretariat	2016-10-12

	Action	Agenda Item	Responsible	Deadline
40.	The TPPT <i>agreed</i> to submit the responses to the objection comments for the draft Cold treatment for <i>Citrus reticulata</i> cultivars and hybrids (2007-212) to the SC for approval	6.5	Secretariat	2016-10-12
41.	The TPPT <i>agreed</i> to restrict the scope of the treatment to hybrid “Nova” and <i>invited</i> the SC to note the change in title from Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus reticulata</i> cultivars and hybrids (2007-212) to Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus reticulata</i> (2007-212)	6.5	Secretariat	2016-10-12
42.	The TPPT <i>agreed</i> to recommend the draft Cold treatment for <i>Ceratitidis capitata</i> on <i>Citrus reticulata</i> (2007-212), as modified in this meeting, to the SC for approval for adoption by CPM	6.5	Secretariat	2016-10-12
43.	TPPT members to submit comments to the steward and assistant steward on the draft ISPM: Requirements of the use of fumigation as a phytosanitary measure (2014-004)	7	TPPT members	2016-09-30
44.	The TPPT <i>invited</i> the SC to consider the recommendations and discussions in this section (8.1) and in section 3.3 on the issues raised by the SC-7 in May 2016 on the draft revision to Annex 1 and 2 of to ISPM 15 (<i>Regulation of wood packaging material in international trade</i>) for the inclusion of Sulphuryl fluoride fumigation of wood packaging material (2006-010A) and for the revision of the dielectric heating section in Annex 1 of ISPM 15 (2006-010B).	8.1	Secretariat	2017-05 SC meeting
45.	The TPPT <i>invited</i> the Secretariat to update the annotated template for draft PTs following TPPT discussions under section 3, 4, 5, 8.1 and 9.2, as relevant.	9.2	Secretariat	2016-09-30
46.	The TPPT <i>invited</i> the SC to consider the proposed modifications to the List of topics for IPPC standards proposed done in the July 2016 virtual meeting and in this face-to-face meeting.	11.2	Secretariat	2016-11 SC meeting
47.	The TPPT <i>agreed</i> to submit written comments on the draft treatment on Methyl Bromide and Sulphuryl Fluoride Fumigation for <i>Chlorophorus annularis</i> in bamboo to Mr Daojing YU (yudj_2002@aliyun.com)	11.3	TPPT members	2016-10-15