REPORT

Virtual Meeting
25 April 2017

Technical Panel on Phytosanitary Treatments
April, 2017

Food and Agriculture Organization of the United Nations

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1. Opening of the meeting

[1] The International Plant Protection Convention (IPPC) Secretariat (hereafter referred to "Secretariat") lead for Technical Panel on Phytosanitary Treatments (TPPT) chaired the meeting and welcomed the following participants:

1. Mr Ezequiel FERRO (Steward of the TPPT)
2. Mr Glenn BOWMAN (Australia)
3. Mr Toshiyuki DOHINO (Japan)
4. Mr Guy HALLMAN (FAO/IAEA)
5. Mr Scott MYERS (USA)
6. Mr Michael ORMSBY (New Zealand)
7. Mr Andrew PARKER (FAO/IAEA)
8. Mr Matthew SMYTH (Australia)
9. Mr Eduardo WILLINK (Argentina)
10. Mr Daojian YU (China)
11. Mr Brent LARSON (IPPC Secretariat, Standard Setting Officer)
12. Ms Adriana G. MOREIRA (IPPC Secretariat, Lead)
13. Ms Janka KISS (IPPC Secretariat, support)
14. Mr Piotr WLODARCZYK (IPPC Secretariat, support)

[2] The full list of TPPT members and their contact details can be found on the International Phytosanitary Portal (IPP)[1].

[3] The TPPT Steward greeted the meeting participants and wished them a fruitful meeting. The TPPT members welcomed the new Steward.

[4] The Secretariat introduced the agenda and it was adopted as presented in Appendix 1 to this report.

Election of rapporteur

[5] Mr Eduardo WILLINK was elected as the rapporteur.

2. IPPC Secretariat Updates

[6] The Secretariat provided updates on the following.

2.1 CPM-12 (2017) update

[7] The 12th Session of the Commission on Phytosanitary Measures (CPM) was concluded successfully on the 11 April 2017 in Incheon, Korea.

[8] An unprecedented 26 standards were submitted for adoption and no less than 24 were adopted (or noted, in the case of diagnostic protocols (DPs)). A total of 10 phytosanitary treatments (PTs) were adopted, but one PT received an objection.

[9] The Secretariat thanked the TPPT members for their efforts and commitment in developing these treatments over the years.

[10] The Secretariat informed the participants that the CPM acknowledged Japan's contribution for the panel by hosting last year's TPPT meeting. Also, the CPM acknowledged all individual experts that contributed to the development of the adopted standards and for PTs, the treatment leads and assistants are noted in an Appendix 11 of the CPM-12 (2017) report[2].

[1] TPPT membership list: https://www.ippc.int/en/publications/81655/

[2] Report CPM-12 (2017) : https://www.ippc.int/en/publications/84387/

[11] The CPM noted the report from the Phytosanitary Measures Research Group (PMRG). The Secretariat reminded the TPPT of the dates and venue of the next PMRG meeting (10 - 13 July, 2017 in Wageningen, Netherlands).

[12] The Secretariat informed the TPPT that some contracting parties mentioned that possible differences between the newly adopted PTs using sulfuryl fluoride treatment[3] and the revision of ISPM 15[4] (*Regulation of wood packaging material in international trade)* may exist and suggested to align them in the future..

[13] During CPM-12 (2017) one contracting party expressed concern on having more than one treatment schedule in the PT Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A) as it is confusing, but didn't object to the adoption of the treatment. Another contracting party was concerned that using only laboratory results for determining the fruit fly population differences might not be robust enough and suggested further testing as well they suggest that manuals, providing operational guidance should be developed (See section 3.2 of this report on the Comments and suggestions from contracting parties before CPM-12 (2017)).

[14] The CPM chairperson reminded the contracting parties, that an open call for PTs is open[5]. The Secretariat reminded the TPPT that there are two types of submissions: Treatments to be considered as international standards (Annexes to ISPM 28 (*Phytosanitary treatments for regulated pests*) and treatments to be considered as "contributed resources" to be posted on the Phytosanitary Resources page[6]. The treatments need to be submitted using the standardized form provided and should be sent to the secretariat along with the supporting data (see section 2.3 Update on the TPPT work programme of this report).

2.2 TP 3 specification Revised by the Standards Committee

[15] The TPPT Steward informed the members, that the specification TP 3: Technical Panel on Phytosanitary Treatments (2004-005)[7] was modified as requested by the Standards Committee (SC) and approved by the SC to include two new tasks related to the IPPC Phytosanitary Treatment Search Facility and the new procedure to include phytosanitary treatments to the Phytosanitary Resources page. .

[16] The Secretariat reminded the TPPT that as the lists containing the adopted PTs in annexes to ISPM 28 was removed, CPM-10 (2015) agreed it could be maintained separately and this search tool will replace those annexes. This search tool will present adopted PTs as well as other treatments used in international trade that meet the criteria established by the Capacity Development Committee (CDC) and then posted on the Phytosanitary Resources page. This amended TP 3 specification also tasks the TPPT to review the treatments proposed for inclusion on the Phytosanitary Resources page and recommend which ones to be included. As well, the TPPT will categorize PTs, both those posted on the Phytosanitary Resources page and those adopted, for inclusion in the IPPC Phytosanitary Treatment Search Facility.

[17] The Secretariat informed the TPPT, that this IPPC Phytosanitary Treatment Search Facility is expected to be developed in the third quarter of 2017.

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[3] PT 22: Sulfuryl fluoride fumigation treatment for insects in debarked wood (2007-101A) and PT 23 Sulfuryl fluoride fumigation treatment for nematodes and insects in debarked wood (2007-101B)

[4] Inclusion of the Phytosanitary treatment Sulphuryl fluoride fumigation of wood packaging material (2006-010A) in annexes 1 and 2 of ISPM 15

[5] More information on the treatment submission: https://www.ippc.int/en/calls/call-for-phytosanitary-treatments-1/

[6] Phytosanitary Resources page: http://www.phytosanitary.info/

[7] Specification TP 3: https://www.ippc.int/en/publications/1308/

2.3 Update on the TPPT work programme

[18] The secretariat recalled that the current TPPT work programme comprised of 2 draft PTs – annexes to ISPM 28 (*Phytosanitary treatments for regulated pests*), and five draft International Standards for Phytosanitary Measures (ISPMs) on treatment requirements.

[19] The Secretariat updated the TPPT on the current status of the draft PTs and draft ISPMs under the TPPT work programme:

[20] **Draft PT: Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* (2009-109)** is currently pending research results. (see section 3.1 of this report)

[21] **Draft PT: Heat treatment of wood using dielectric heating (2007-114)** received an objection prior to CPM-12 (2017) (discussed in Section 3.3 of this report).

[22] **Draft ISPM on Requirements for the use of fumigation treatments as a phytosanitary measure (2014-004):** The Secretariat informed the participants that this draft ISPM will be discussed by the Standards Committee (SC) in May 2017 and is recommended to be submitted to the first consultation in July 2017.

[23] **Draft ISPM on Requirements for the use of temperature treatments as a phytosanitary measure (2014-005):** The Secretariat informed the TPPT, that the draft ISPM was revised and the draft and the responses to the comments will be submitted to the SC-7 (SC working group) in May 2017 for approval for a second consultation. Mr Ezequiel FERRO (the Steward for this draft ISPM and for the TPPT) will be presenting this draft ISPM to the SC-7.

[24] **Draft ISPM on Requirements for the use of modified atmosphere treatments as a phytosanitary measure (2014-006):** This draft was presented once to the TPPT in 2015 but was deferred. The draft is currently being reviewed by the Stewards (Ms Marina ZLOTINA and Mr Scott MYERS) and is expected to be discussed at the TPPT on the next face to face meeting.

[25] **Requirements for the use of chemical treatments as a phytosanitary measure (2014-003) and Requirements for the use of irradiation as a phytosanitary measure (Revision to ISPM 18) (2014-007)):** These drafts was presented once to the TPPT in 2015 but not fully reviewed. As these drafts are assigned priority 3, they are being processed in due course.

[26] **Call for phytosanitary treatments:** A call for PTs was opened in February 2017, which will feed into the work of the TPPT. The submissions that arrive before the 5 of June will be prioritized for review at the 2017 July TPPT face-to-face meeting.

[27] The Secretariat queried if the PMRG members (including Japan) plans to submit phytosanitary treatments. The chairperson for the PMRG (also a member of the TPPT) informed the panel that, currently, the PMRG has no plans to have their members submit treatments as the PMRG will meet in July and only then will be able to coordinate submissions. It was mentioned that the International Atomic Energy Agency (IAEA) had recently published the results of a research project on phytosanitary treatments and that some irradiation treatments could be developed as annexes to ISPM 28 based on this research. However, it was noted that only NPPOs or RPPOs can submit PTs.

[28] The Secretariat reminded the TPPT that after the Expert Consultation on phytosanitary treatments for the *Bactrocera dorsalis* complex meeting in Okinawa in 2014[8], the Secretariat requested the permission from several exporting countries to allow other contracting parties that accept the treatments to release the treatment data which could be used as supporting information.

[8] Expert Consultation on phytosanitary treatments for the Bactrocera dorsalis complex: https://www.ippc.int/en/core-activities/standard-settings/expert-consultation-phytosanitary-treatments-bactrocera-dorsalis-complex/

[29] The Secretariat recalled that the recently published paper[9], an outcome of the PMRG, contained several treatments being used for *B. dorsalis* on different commodities. As the treatments submission has to come from an official IPPC contact point, and as several treatments from the research paper and from the Expert Consultation are approved by Japan, it was proposed to request if Japan could consider submitting these treatments.

[30] It was noted that any treatment submission should be included into the standardized form provided for the treatment submissions to enable comprehensive review.

[31] A TPPT member from Japan, clarified that, at the moment, there were no treatments planned to be submitted by Japan.

[32] The Secretariat reiterated, that since the PMRG should already have treatment data released by the country of export, the PMRG or TPPT should facilitate the submission of these treatments by helping to include them into the submission forms and contacting the importing countries that approved the treatment to see if they would consider submitting them along with the supporting data.

[33] The Japanese TPPT member offered to liaise with the Japanese plant protection organization on this matter.

[34] The Chairperson of the PMRG offered to liaise with the PMRG members asking for help in writing up some of the treatment submissions. The secretariat suggested to start engaging the PMRG members as soon as possible, since their meeting is coming up soon (July 2017). TPPT members were reminded that in order to enable the review of the submitted treatments by the TPPT members at their next face-to face meeting, the closing date for submissions is 5 June 2017.

[35] The TPPT agreed to liaise with the PMRG on the ongoing call and request the PMRG members help in gathering the supporting information.

[36] **The next face to face meeting** will be in Vienna, Austria, IAEA HQ on 17 July21 July 2017. This meeting will be hosted and partially funded by the Joint Division of the Food and Agriculture Organization and International Atomic Energy Agency (FAO-IAEA). The plan is to review priority submissions received by the 5 June 2017 deadline and to have a detailed discussion on the draft ISPM on the Requirements for the use of modified atmosphere treatments as a phytosanitary measure (2014-006).

[37] The TPPT will also discuss any available research results related to the remaining draft Phytosanitary treatments already on the TPPT work programme.

3. TPPT work programme

3.1 Preliminary research results for the draft PT Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* (2009-109): Comparison of three populations of *B. dorsalis* for tolerance to VHT in mangoes

[38] The Secretariat recalled that a comment from the consultation period suggested that there may be differences in heat tolerance of *B. cucurbitae* populations, and possible evidence for *B. dorsalis* was presented in the 2016 September meeting. 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. The TPPT in its September 2016 meeting decided to defer the decision on moving forward with this treatment until further analysis and data was made available to the TPPT.

[9] Phytosanitary Treatments Against *Bactrocera dorsalis* (Diptera: Tephritidae): Current Situation and Future Prospects: https://academic.oup.com/jee/article-abstract/110/1/67/2744806/Phytosanitary-Treatments-Against-Bactrocera

[39] The Treatment lead, Mr Guy HALLMAN, introduced the document[10] outlining the research he conducted in the Insect pest laboratories of the Joint (FAO/IAEA) division. He pointed out that some of the funds enabling to conduct this study came from the Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture.

[40] The objective of the study was to determine if populations of *B. dorsalis* vary significantly in tolerance to vapour heart treatment (VHT). *B. dorsalis* populations from China (Fujian Province), Kenya, and Thailand were used to naturally infest mangoes. Mangoes were used instead of papayas because papayas were not available locally. It is assumed that significant differences among populations of *B. dorsalis* identified in any given commercially-treated fruit would mean that they could differ for other fruits as well.

[41] One day old eggs were tested, as literature suggests that this is the most tolerant life stage to VHT. The mangoes infested with the different populations were placed in a 1 m^3 volume environmental chamber at 47°C and 95% RH for approximately 3 h. The aim was to vapour heat treat the infested mangoes long enough to kill almost all of them, but leaving a few survivors so that differences in tolerance would be observable.

[42] Although differences in survival after VHT among the 3 populations were not significant at the 95% confidence level, they would be at slightly above that level; e.g., 90% confidence. Therefore the treatment lead suggested that it was difficult to conclude robustly that the three populations do not differ in tolerance to VHT. The population from Thailand appears to be superficially more tolerant. In any case, the apparently most susceptible population, the Kenya population, still required a seed surface temperature of 45.3°C to kill 100%, which was only 0.1°C lower than the Thailand population.

[43] One TPPT member queried about the variation of the number of pests in each fruit (oviposition rates), and if the differences in the populations may be driven by the high oviposition rate in replicate 1 and 2.

[44] The Treatment lead responded explaining that there was some variation that is unavoidable with natural infestation. He explained, that they considered the difference in the oviposition rate but have not found conclusive evidence that this was influencing the results. He also mentioned, that the size of the fruit varied sometimes too, but suggested that the eggs being close to the surface of the fruit should have received the appropriate heat dosage just the same.

[45] The Treatment lead asserted though, that the differences between populations disappeared as the treatment temperature rose and as the treatments schedules were operating with considerable safety margins, this should still cover the slight variations between the different populations in heat tolerance.

[46] The TPPT thanked the treatment lead for conducting the experiments and presenting the preliminary results and acknowledged the complicated experimental design and the difficulty of getting conclusive results. One TPPT member informed that his team recently conducted similar research using *B. dorsalis* populations from Okinawa (Japan) and Thailand on mangoes and that he could present the results at the July 2017 TPPT face to face meeting. The TPPT requested to have the discussion paper on this additional research before the 10 June 2017 to enable the proper preparation.

[47] The TPPT was invited to forward any remaining comments to the Treatment lead before the 05 June 2017, so he can prepare and expand the discussion paper to include further details. The TPPT will proceed with this discussion on the 2017 July face to face meeting.

[10] 05_TPPT_2017_Apr

3.2 Comments and suggestions from contracting parties before CPM-12 (2017):

- Six phytosanitary cold treatments for *Ceratitis capitata*: China

[48] The Secretariat updated the TPPT on the comments that China provided on the six cold treatments for *Ceratitis capitata* later adopted by the CPM-12 (2017) [11]. The comments pointed out that they believe that the study to test the differences between the differences in the *C. capitata* populations to cold treatments need extensive verification as the experiments were only carried out under laboratory conditions. Additionally they suggested operational manuals would be useful to successfully conduct the treatments. The Secretariat explained that the comments were reiterated at the CPM-12 (2017) and the CPM noted them.

- Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A): Thailand

[49] The secretariat informed the TPPT, that before CPM-12 (2017) Thailand submitted their objection to the PT 24: Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206) because while the treatment schedules 1 and 2, are the same temperature at 2°C or below, schedule 2 requires to use 2 days longer than schedule 1, which could be resulted in higher cost of transportation. Therefore, Thailand noted that if this standard was to be adopted and employed as a phytosanitary measure, it could cause conflicts among the importing and exporting countries on the selection of aforesaid schedules.

[50] In addition, Thailand also mentioned that as schedule 1 indicated that "there is 95% confidence that the treatment according to this schedule kills not less than 99.9937% of eggs and larvae of *Ceratitis capitata*", thus the efficacy of schedule 1 is still less than probit 9 level, which is defined at 99.9968%.

[51] After clarifying that having more than one treatment schedule in a PT provides additional options for exporting and importing countries and that they differ in their efficacy, Thailand agreed to withdraw their objection and only make an observation on the issue at the CPM-12 (2017).

[52] The Secretariat highlighted, that the adopted PT 18 (Cold treatment for *Bactrocera tryoni* on *Citrus limon*) also proposes two treatment schedules (2 °C or below for 14 continuous days and 3 °C or below for 14 continuous days). ISPM 28 (*Phytosanitary treatments for regulated pests*) does not require that a treatment efficacy should meet probit 9, but that it should have a stated level of efficacy.

3.3 Objection received three weeks prior to CPM-12 (2017) on the draft PTs:

- Treatment lead responses to objection on Heat treatment of wood using dielectric heating (2007-114)

[53] The draft phytosanitary treatment on Heat treatment of wood using dielectric heating (2007-114) received an objection before the CPM-12 (2017)[12].

[54] The contracting party raising the objection suggested that the object of this standard is "wood", but in the references, the test data are about processed wood bars and wood chips. Wood bars and wood chips are greatly different from crude wood, the diameter of crude wood is larger than wood chips, so the test results of wood bars and wood chips are not applicable to "wood".

[55] It was also stated, that *Bursaphelenchus xylophilus* in wood in international trade cannot be killed under the condition of 60℃ and 1 min proposed in the standard, based on some pre stage testing done and cited in the objection.

[56] The contracting party suggested delaying the adoption of the treatment until further verification and testing. They offered to provide relevant test data after being verified.

[11] China's comments on the six cold treatments: https://www.ippc.int/en/publications/84147/

[12] Objections received prior to CPM-12 (2017): https://www.ippc.int/en/publications/84146/

[57] The Treatment lead prepared a draft response to the objection[13] to address these concerns and introduced this paper to the TPPT.

[58] The Treatment lead mentioned that the evidence for the efficacy of the Dielectric Heating (DH) schedule (60°C for 1 minute) on wood against Pine Wood Nematode (PWN), *B. xylophilus* is based on Hoover *et al* (2010)[14]. In their work, Hoover *et al* (2010) exposed four different isolates of PWN to DH in both small wood samples (2.5 by 3.8 by 0.64 cm) held within larger wood blocks (8.9 cm^3), and in large "industrial scale" wood blocks (10.2 by 10.2 by 25.4 cm). The TPPT was satisfied that these experimental conditions were appropriately representative of wood in international trade.

[59] It was stressed that the DH schedule recommended for adoption does not state that "all" PWN will be killed at 60°C for 1 minute, but only 99.9968% will be killed (no survivors in around 30,000 exposed PWN). It was explained that, in practice, from a population of 3,448,166 PWN outlined in the objection from the combined controls (see table 1 of the objection received for this draft PT), it is still possible to have 110 survivors (3,448,166 x (1-0.999968)) and still achieve the stated level of efficacy stated in the treatment.

[60] It was noted that 5,648 live PWN were extracted from the treated samples and it is unclear if these PWN were extracted immediately after treatment, or after the wood had been incubated for two to three weeks (e.g. 21 days) as per the diagnostic protocol (ISPM 27 Annex 10: *Bursaphelenchus xylophilus*)[15]. It was pointed out that if the first option was used, then the results could indicate that the level of expected efficacy (99.9968%) was not achieved. It was also mentioned that, if the wood was incubated for 21 days, it should be expected that the original surviving population would have undergone several generations (completing their life cycle from egg to adult in 6 days, each female laying between 80 and 150 eggs) and increased significantly in number. After incubation the numbers detected would not necessarily indicate that the expected efficacy (99.9968%) had not been achieved, as the extracted numbers would have increased significantly from the small number of original surviving nematodes.

[61] It was noted that, in order to better assess the results presented by China and the possibility that the in draft PT would indicate a failure of the DH schedule to achieve the stated efficacy (99.9968%), more information would be required on the methodology.

[62] The Secretariat informed the TPPT that at the CPM-12 (2017) the submitter of the objection agreed to provide more information on the pre-trial data that the objection is based on before the upcoming SC meeting.

[63] The Chinese member of TPPT confirmed that further tests are being carried out at the new dielectric heat treatment facility in China, and that the new data and test methods will be provided as soon as possible. He also confirmed that the PWN was extracted immediately after treatments.

[64] The TPPT agreed to contact the researchers conducting the tests to verify the objection on the Heat treatment of wood using dielectric heating (2007-114), and send the information on the setup of the tests and the results to the Secretariat for distribution among the TPPT members.

4. Other business

[65] No othe+r business was discussed.

[13] 03_TPPT_2017_Apr

[14] Hoover, K., Uzunovic, A., Gething, B., Dale, A., Leung, K., Ostiguy, N. & Janowiak, J.J. 2010. Lethal temperature for pinewood nematode, *Bursaphelenchus xylophilus*, in infested wood using microwave energy. *Journal of Nematology*, 42: 101–110.

[15] Annex to ISPM 27: DP 10: *Bursaphelenchus xylophilus*: https://www.ippc.int/static/media/files/publication/en/2016/04/DP_10_2016_En_2016-04-14.pdf

5. Close of the meeting

[66] The Secretariat congratulated the panel on the adopted treatments thanked the TPPT members and the new TPPT Steward for their participation and closed the meeting.

Attachment 1: Agenda

2017 APRIL VIRTUAL MEETING OF THE TECHNICAL PANEL ON PHYTOSANITARY TREATMENTS (TPPT)

25 April 2017
Time 12:00-14:00 (GMT +2)

AGENDA

(Last update: 2017-04-12)

AGENDA ITEM	DOCUMENT NO.	PRESENTER
1. Opening of the meeting		
1.1 Welcome by the IPPC Secretariat and introductions	02_TPPT_2017_Apr	MOREIRA / ALL
1.2 Adoption of the agenda and election of the rapporteur	01_TPPT_2017_Apr	MOREIRA / ALL
2. IPPC Secretariat Updates		
2.1 CPM-12 (2017) update	-	MOREIRA / ALL
2.2 TP 3 specification: Revised by the Standards Committee	Link to TP 3	FERRO / ALL
2.3 Update on the TPPT work programme	-	MOREIRA / ALL
3. TPPT work programme		
3.1 Preliminary research results for the draft PT Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* (2009-109): Comparison of three populations of *B. dorsalis* for tolerance to VHT in mangoes	05_TPPT_2017_Apr	HALLMAN
3.2 Comments and suggestions from contracting parties before CPM-12: - Six phytosanitary cold treatments for *Ceratitis capitata*: China - Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A): Thailand	Link to the comments 04_TPPT_2017_April	KISS / ALL
3.3 Objection received three weeks prior to CPM-12 on the draft PTs: Treatment lead responses to objection on Heat treatment of wood using dielectric heating (2007-114)	Link to the objections 03_TPPT_2017_Apr	MOREIRA / ORMSBY / ALL
4. Other business	-	MOREIRA
5. Close of the meeting	-	MOREIRA