Food and Agriculture Organization of the United Nations

International Plant Protection Convention

REPORT

Technical Panel on Phytosanitary Treatments

Virtual meeting
15 October 2020

IPPC Secretariat

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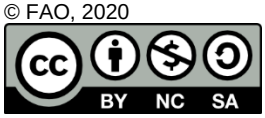

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1. Opening of the Meeting

1.1. Welcome by the IPPC Secretariat and introductions

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

1. Mr David OPATOWSKI (TPPT Steward)
2. Mr Toshiyuki DOHINO (Japan)
3. Mr Walther ENKERLIN HOEFLICH (IAEA)
4. Mr Peter LEACH (Australia)
5. Mr Scott MYERS (USA)
6. Mr Michael ORMSBY (New Zealand)
7. Mr Matthew SMYTH (Australia)
8. Mr Eduardo WILLINK (Argentina)
9. Mr Guy HALLMAN (Invited expert)
10. Ms Janka KISS (IPPC Secretariat, lead)
11. Mr Artur SHAMILOV (IPPC Secretariat, support)

[2] Mr Daojian YU and Ms Andrea BEAM was unable to attend this meeting.

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

1.2. Adoption of the agenda and election of the rapporteur

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

[5] Mr Scott MYERS was elected as the Rapporteur.

2. TPPT work programme

2.1 Vapour heat - modified atmosphere treatment for *Cydia pomonella* and *Grapholita molesta* in fruit of *Malus pumila* and *Prunus persica* (2017-037/038)

[6] Mr Michael ORMSBY, the Treatment Lead introduced the Treatment Lead summary and the recently received additional information from the submitter, the compiled comments from the first consultation and the draft PT[2].

[7] The Treatment Lead explained that this PT just completed the first consultation and the TPPT is invited to review the responses to the comments. It was also highlighted that the author of the paper the PT is based on, submitted some further comments in a discussion paper (attached to the Treatment Lead summary: 03_TPPT_2020_Oct).

[8] **Humidity**. One comment suggested that mortality is not affected even if the relative humidity exceeds 95%. The TPPT discussed that the higher the humidity, the higher the heating rate is (increased conductivity of the air), and this has an indirect effect on the treatment however they agreed that ultimately the temperature of the fruit is what is critical to the efficacy. They agreed to change the text of the PT to "90 percent or above" and thus remove the upper limit of the humidity in response to the comment.

[9] **Commodity quality**. Another comment was concerned with the effect of this treatment on fruit quality, especially concerning that the application of this treatment type is not widespread. The TPPT noted that condensation on the fruit might cause fruit damage, and the limit was proposed to prevent that but it's not based on the experimental data. The TPPT discussed then the recurring issue of commodity quality

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

[2] 02_TPPT_2020_Oct, 03_TPPT_2020_Oct, 2017-037/038

and highlighted that in the footnote of the PT, it is stated that "potential effects of treatments on product quality are considered for some host commodities before their international adoption. However, evaluation of any effects of a treatment on the quality of commodities may require additional consideration.". They also noted that the *Other relevant information* section includes a reference to the original research supporting the treatment schedule. The TPPT agreed to include an additional sentence to direct the attention of the users of this treatment to the research papers that discuss fruit quality issues.

[10] **Terminology**. The additional recommendation of the submitter included changing the terminology regarding the naming of the treatment type, and recommended to change it to "moist-forced air temperature treatment" however the TPPT agreed not to change the terminology as it is used as specified in ISPM 5 and ISPM 42.

[11] **Holding period**. The draft specifies a holding period of 25 minutes and the referenced paper described a holding period of 30 minutes. The Treatment Lead will review the raw data provided to determine why 25 minutes of holding time was used. If there is no adequate justification, the holding period should be changed to 30 minutes.

[12] **Cooling schedule**. The treatment recommends a cooling schedule using air not colder than 0 C as it was thought that commercial application will aim to cool the fruit as soon as possible to preserve fruit quality. The TPPT recognized that this cooling schedule was not tested in the supporting study, and thus agreed to remove the mention of cooling from the text according to the additional recommendation of the submitter.

[13] The TPPT agreed to the modifications on the PT and the responses to the consultation comments, and approved both to be presented to the SC for approval for second consultation.

[14] The TPPT

(1) *approved* the responses to consultation comments on the Vapour heat - modified atmosphere treatment for *Cydia pomonella* and *Grapholita molesta* in fruit of *Malus pumila* and *Prunus persica* (2017-037/038) as "TPPT responses" to be presented to the SC

(2) *approved* the draft PT: Vapour heat - modified atmosphere treatment for *Cydia pomonella* and *Grapholita molesta* in fruit of *Malus pumila* and *Prunus persica* (2017-037/038) to be presented to the Standards Committee (SC) for approval for second consultation

2.2 Draft PT: Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027)

[15] Mr Walther ENKERLIN, the Treatment Lead introduced the Treatment Lead summary, the responses from the submitter, and the draft PT[3].

[16] The Treatment Lead explained that this PT is considered for approval for first consultation and the TPPT have drafted this treatment but had to ask some clarification from the submitter. There responses are presented to the TPPT, who is invited to review these and finalize the PT.

Raw data. The TPPT discussed the efficacy of the treatment in the 2019 July TPPT meeting[4] and requested clarification, as the counts to estimate the number of treated pests were conducted on half of the total number of potatoes and pumpkins. The counts for each individual pumpkin or potato or rearing box was requested. The submitter provided the raw data on the number of mealybug females in each counted potato or pumpkin. As half of the irradiated potatoes and pumpkins was used for female-number counting, the total number counted in the first, second, and third confirmatory test was 106 potatoes, 60 pumpkins, and 67 pumpkins, respectively.

[3] 04_TPPT_2020_Oct, 2017-027, https://www.ippc.int/en/work-area-pages/draft-phytosanitary-treatments-and-relevant-documents/

[4] 2019-07 TPPT report: https://www.ippc.int/en/publications/87681/

[17] The TPPT agreed that the response provided is satisfactory. Tables show the following numbers: 59,260 (1st confirmatory test - potato), 11,170 (2nd confirmatory test - pumpkin) and 13,475 3rd confirmatory test - pumpkin) providing a total treatment size of 83,905. This total gives a treatment efficacy of 99.9964% at the 95% confidence level."

[18] The TPPT noted that the control mortality was not considered as the study directly counted the insects in half of the total treated fruits after treatment. The TPPT noted that in Zhan *et al* 2016 noted a control mortality rate of 2%, which is insignificant. The number of F1s produced by the controls indicated a high level of fertility. As they counted all treated individuals, the counted number can be used directly (subject to control adjustments as per Abbot). The efficacy calculation is presented in Appendix 2.

[19] **Description of methods.** The TPPT requested more details on the methods used to determine timing for the counts of F1 neonates and 2nd instar nymphs. The submitter explained, that in the experiment, the primary observed longevity from egg to 1st instar nymph of the mealybug was about 1 week. The detailed investigation from Wang Yi (2015)[5] also indicated that the durations for eggs, first-instar, and second-instar nymphs were 4.47±0.72, 6.61±1.19, and 6.15±1.21 days, respectively. During confirmatory tests, first-instar nymphs were observed when the female adults were irradiated ~6 days prior, and the number of nymphs within two weeks was estimated and recorded as 1st instar nymphs. Since the goal of this investigation was to check if there were any 2nd instar nymphs, then, we check the size of nymphs (the 2nd instar nymph is nearly twice as long as the1st instar) and if there is any molted cuticle 5 days after the neonate emergence (Wang Yi, 2015).

[20] **Timing of counts.** The Treatment lead asked the following additional question. Given that according to Wang Yi's investigation the development time from egg to 2nd instar is around 17 days (4.47 (eggs) + 6.61 (1st instar) + 6.15 (2nd instar)), it was queried if the observations and measurements of the size of the nymphs covered the complete 17 days development time, and how many days passed after the female adults were irradiated until the last observation and recording of nymphs.

[21] The submitter explained that the size of the 1st and 2nd instar nymphs is about 0.7×0.4mm and 1.3×0.6mm, respectively, as reported by Wang Yi (2015). In the study they observed the nymphs three times a week to monitor for development to the 2nd instar (attention was given to check for the presence of molted cuticle) until all the irradiated adults died (normally 3 weeks), after which the number of dead nymphs were counted and recorded. He informed that the time for the non-irradiated eggs to develop to 2nd instar nymphs was less than two weeks (4.47 (eggs) + 6.61 (1st instar)).

[22] The TPPT noted that the observations went on for three weeks until all irradiated adults died and so covered the development time for eggs and 1st instar nymphs as well as any nymph that could have passed to a 2nd instar, since the development time in the control was less than two weeks. They agreed that the explanation provided is satisfactory.

[23] One member reminded the TPPT of the discussion in March 2018 on whether to include ornamental plants into the scope of the treatment as this mealybug is often present in ornamental plants. Usually in the case of irradiation treatments, the target regulated article is "all fruits and vegetables that are hosts of" the pest, as it is agreed that if the dose mapping is appropriately done and the dose is required dose is delivered, the target regulated article does not influence the efficacy. One member noted that although he agrees that the treatment works for ornamental plants (e.g. cut flowers), he is concerned with the application of this treatment for example for potted plants where the soil represents very different density, however it was clarified that plant growth is inhibited by irradiation, so it wouldn't be preferred to irradiate potted plants anyway.

[5] Wang Yi. 2015. The Effects of Ethyl Formate Fumigation on the Jack Beardsley Mealybug and Nutritional Quality of Pineapple. Master Degree Dissertation, Shanxi Agricultural University.

[24] The TPPT agreed that as long as dosimetry can be measured and it is possible to ensure that the irradiation is reaching the target pest, ornamental plants should be included into the scope of the treatment and agreed to modify the draft accordingly.

[25] TPPT

(3) *recommended* the draft phytosanitary treatment Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027) to the Standard Committee (SC) for approval for first consultation.

2.3 Procedural issues

Update from the SC meeting and planning for the postponed face to face meeting

[26] The SC had a virtual meeting on the 23 September and discussed several issues relevant to the TPPT. The Secretariat updated the TPPT on these issues[6].

[27] **Phytosanitary treatment (PT) objection**. The SC agreed to invite the International Forestry Quarantine Research Group (IFQRG) and Phytosanitary Measures Research Group (PMRG) to search for information on the operational use of dielectric heat treatment for wood and for wood packaging material, including how it is used and by which countries. The SC invited the Technical Panel on Phytosanitary Treatments (TPPT) to liaise with IFQRG and PMRG regarding the above invitation to search for information, and to report back to the SC.

[28] The SC advised the TPPT to do no more work on the draft PT Heat treatment of wood using dielectric heating (2007-114) while the information from IFQRG and PMRG is being sought, but to liaise with these groups.

[29] The TPPT discussed that the best way to conduct these liaison activities would be through the TPPT members Mr Mike ORSMBY and Mr Peter LEACH who are the current chairs of IFQRG and PMRG respectively. The TPPT also noted that this issue is more suited to the scope of the IFQRG then PMRG.

[30] They also noted the development of the guide on the application of ISPM 15. The TPPT members were invited to inform the Secretariat if they are aware of any commercial operation.

[31] **Minimum number of consultation periods for PTs**. The SC noted the points made at this meeting regarding the minimum number of consultations for draft PTs, and deferred further consideration until a future SC meeting (noting that any changes to the Standard Setting Procedure should be considered alongside those proposed for development of commodity standards).

[32] **TPFQ**. The SC decided to recommend to the CPM to disestablish the panel considering that any future wood related topic could be addressed by an expert working group where the TPFQ members could participate. The SC thanked the members and stewards of the TPFQ for their dedicated work over the years.

Work planning

[33] The Secretariat reiterated that due to the pandemic the face to face meeting had to be postponed and the TPPT agreed to hold more frequent and at times two-day long virtual meetings.

[34] The November virtual meeting of the TPPT will focus on approving the responses to comments and the draft PTs that completed second consultation in order to present them to the SC for recommendation for adoption by the CPM in April 2021.

[35] The virtual meeting in December will focus on the ISPM 18 revision. Mr Carl Blackburn submitted a discussion paper on increasing the energy limit for X-rays from 5.0 to 7.5 MeV, and the TPPT will have a chance to discuss at the December meeting.

[6] 2020_eSC_Oct_05

Submission forms

[36] The Secretariat reiterated the need for renewing the call for phytosanitary treatments as no new treatments have been received since 2018.

[37] **Improving the quality of submissions**. At the July 2019 meeting in order to further improve the quality of submission, the TPPT decided to revise the submission form. Mr Scott MYERS and Mr Peter LEACH volunteered to review the checklist and submission form taking into account the PMRG guidelines and the recent experiences on evaluating treatment submissions to make it more user friendly and highlight better the necessary elements of the submission. It was noted that the current submission forms both for the ISPM 28 treatment proposals and for contributed resources are posted at the calls page. The TPPT has been using the corresponding Checklist to evaluate the treatments.

[38] Mr Scott MYERS and Mr Peter LEACH presented their consideration[7] of the issue and invited the TPPT to discuss the following points:

- Although the submission form requests a lot of information and it could be presented in a better layout, it corresponds to the required information as described in ISPM 28.
- The Checklist is the repetition of the items on the submission form
- The submissions don't seem to address these items very well – rather repeating the supporting documentation
- It may be difficult address the quality of submissions in the submission form, and reference to recommended research practices would be more beneficial instead (e.g. PMRG guidelines)

[39] One of the considerations was, rather than use the submission form, to provide submitters with information on what is expected in the supporting documents and ask that they confirm the information is included and/or indicate where in the supporting documents it can be found.

[40] The TPPT was invited to discuss the issue of the submission forms (both for ISPM 28 treatment proposals and for treatments as "contributed resources").

[41] The TPPT agreed that the basic criteria used for submitting treatments into the Search tool as a contributed resource is that they are "treatments used in international trade or supported by a published paper" and the submission form[8] should indicate that.

[42] The TPPT discussed the user friendliness of the submission form for ISPM 28 treatment proposals and how it facilitates the evaluation of the treatment. They decided that it is beneficial that the submission form highlights the ISPM 28 criteria, but it may be redundant to have to copy and paste sections of the supporting documentation into the submission form. They considered that the quality of the submissions would improve if the submitters were more aware of the research guidelines developed by the PMRG and suggested to provide a link to these on the webpage "Call for Treatments". They agreed to try to create a simpler submission form and include the request to provide the raw data already at the submission (as most of the TPPT requests for additional information were requesting this). The TPPT will discuss further the issue of the submission forms once the leads had a chance to consider it based on the TPPT discussion.

[43] The TPPT

(4) *noted* the update and invited the Chair of IFQRG to facilitate the liaison between the TPPT and the IFQRG regarding guidance on the application on dielectric heat treatments

(5) *agreed* to the criteria for the phytosanitary treatments as contributed resources and the submission form

[7] 06_TPPT_2020_Oct

[8] Submission form for phytosanitary treatments as "contributed resources": https://www.ippc.int/en/publications/84007/

(6) *agreed* to discuss further the submission form for ISPM 28 treatments

3. Close of the Meeting

[44] The Secretariat thanked the TPPT members for their participation and closed the meeting.

Appendix 1: Agenda

2020 OCTOBER VIRTUAL MEETING OF THE TECHNICAL PANEL ON PHYTOSANITARY TREATMENTS (TPPT)

AGENDA

	AGENDA ITEM	DOCUMENT NO.	PRESENTER
1.	Opening of the meeting		
1.1	Welcome by the IPPC Secretariat		KISS / ALL
1.2	Adoption of the agenda and election of the rapporteur	01_TPPT_2020_Oct	KISS / ALL
2.	TPPT work programme	All submissions: https://www.ippc.int/en/work-area-pages/draft-phytosanitary-treatments-and-relevant-documents/	
2.1	Vapour heat - modified atmosphere treatment for *Cydia pomonella* and *Grapholita molesta* in fruit of *Malus pumila* and *Prunus persica* (2017-037/038)		ORMSBY
	- Compiled comments	02_TPPT_2020_Oct	
	- Treatment Lead summary and comments from the submitter	03_TPPT_2020_Oct	
	- Draft PT	2017-037/038	
2.2	Draft PT: Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027)		ENKERLIN
	- Responses from the submitter	Link to the submission and additional information	
	- Treatment Lead summary	04_TPPT_2020_Oct	
	- Draft PT	2017-027	
2.3	Procedural issues		
	- Update from the SC meeting and planning for the postponed face to face meeting	05_TPPT_2020_Oct	KISS
	- Submission forms	06_TPPT_2020_Oct	LEACH/ MYERS
3.	Close of the meeting	-	KISS

Appendix 2: Efficacy calculation for Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027)

[45] The efficacy calculation is based on Couey & Chew (1986)[9].

[46] The equation is: Efficacy (%) = (1 - (1/(T/m)))*100

[47] With no survivors the constant (m) in the equation is 3 to give a 95% level of confidence.

[48] Where "T" = treated number of individuals, and "m" is the constant mentioned above

[49] T = 83,905 and m = 3, (1 - (1/(83,905/3))% = 99.9964% (at the 95% confidence level).

[9] Couey H. M., Chew V., (1986) Confidence Limits and Sample Size in Quarantine Research, Journal of Economic Entomology, Volume 79, Issue 4, 1 August 1986, Pages 887–890, https://doi.org/10.1093/jee/79.4.887