Food and Agriculture Organization of the United Nations

International Plant Protection Convention

REPORT

Technical Panel on Phytosanitary Treatments

Virtual meeting
04 March 2020

IPPC Secretariat

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CONTENTS

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. Ms Andrea BEAM (USA)
3. Mr Toshiyuki DOHINO (Japan)
4. Mr Walther ENKERLIN HOEFLICH (IAEA)
5. Mr Scott MYERS (USA)
6. Mr Michael ORMSBY (New Zealand)
7. Mr Matthew SMYTH (Australia)
8. Mr Eduardo WILLINK (Argentina)
9. Mr Daojian YU (China)
10. Mr Guy HALLMAN (Invited expert)
11. Ms Janka KISS (IPPC Secretariat, lead)

[2] 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

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

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

2. TPPT work programme

2.1 Irradiation treatment for the genus Anastrepha (2017-031) – priority 1

[5] Mr Matthew SMYTH, the Treatment Lead introduced the Treatment Lead summary, the compiled comments and the revised draft[2] and the TPPT discussed the outstanding comments, noting that the some of the issues were introduced, at the previous meeting, but the discussion weren't concluded.

[6] **Extrapolation.** A key issue raised by a number of member countries was whether there was sufficient technical justification to enable the extrapolation of the data assessed by the TPPT to all species in *Anastrepha*, noting also that a higher (100 Gy) dose is currently accepted for *A. serpentina* under PT 3. It was noted however that the efficacy of PT 3 is 99.9972%, whereas the proposed generic one for all *Anastrepha* species is 99.9968% (lower). Particular concerns have been raised regarding the limited number of species for which data are available, upon which the TPPT has based the draft treatment standard.

[7] In the development of this draft standard, data was considered for the major economic species of *Anastrepha* identified from ISPM 27 DP 9, including for *A. fraterculus*, *A. grandis*, *A. ludens*, *A. obliqua*, *A. serpentina*, *A. striata* and *A. suspensa*. Following a review of the literature, the agreed position of the TPPT was that *A. ludens* is considered the most radiotolerant of the assessed species, supporting it as a suitable proxy for establishing an irradiation dose for all economic species in the genus. A full review was reported by Hallman (2013), and discussed in detail by the TPPT. The TPPT also discussed the higher 100 Gy dose used as the basis for *A. serpentina* under PT 3, as well as for a number of limited studies in the literature. In the case of *A. serpentina*, a lower dose was considered by the TPPT as likely to have been effective but they took a conservative approach at the time in finalizing PT 3. For the remaining studies, notable methodological concerns were raised and were not considered

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

[2] 2017-031, 02_TPPT_2020_Mar, 03_TPPT_2020_Mar

representative. Ignoring these outliers, the data for different species of *Anastrepha* is relatively homogeneous. A number of member countries have commented that it should be more clear in the treatment standard how the proposed efficacy was calculated. The draft annex specified an efficacy of 99.9968% but did not clarify what parameters were used in determining this rate. Acknowledging the comments provided, the TPPT agreed that the text of the PT should indicate how the efficacy is determined for a generic treatment (the most tolerant stage is identified for the economically important species in the genus and the efficacy is established based on studies conducted on the most tolerant life stage of the most tolerant species in the genus).

[8] **Most tolerant stage**. One of the comments questioned if the establishment of the most tolerant stage was conducted with a large enough number of insects. The TPPT agreed that contrary to the confirmatory tests, the most tolerant life stage testing does not require thousands of fruit flies.

[9] One member queried how many is enough to identify the most tolerant stage. Another member informed that normally 60-300 individuals is enough to test depending on the specificity and the efficacy needed.

[10] **Non-peer reviewed publication**. One comment suggested that one of the references concerning *Anastrepha grandis* is published in a newsletter that does not have the same standing as a peer reviewed journal. The TPPT noted that the research was conducted in Seibersdorf, and that regardless of this study, the data supporting the treatment is robust enough to establish the efficacy against the whole genus.

[11] **Higher dose**. One comment suggested to raise the dose, however the TPPT thought that there is large enough number tested for the most tolerant species and there is enough margin of safety to establish confidence in the efficacy of the selected target dose.

[12] One member noted that in order to having to repeat the trial, researchers often select a dose that surely works but may be an “overkill”. This results in higher doses then necessary and give the impression that lower doses would not be effective. This approach also leaves the burden of a delivering an oversized treatment to the appliers.

[13] **PT 3.** A number of commenters queried whether the irradiation treatment schedule currently published for *Anastrepha serpentina* at 100Gy under PT 3 would be reviewed in context with the 70Gy dose proposed for all *Anastrepha*. Given the intersection between the proposed generic *Anastrepha* treatment and existing *Anastrepha* PTs. ,

[14] The TPPT agreed to propose to the SC to discuss if PT 3 was needed at all. They considered that as it has a higher level of efficacy (Probit 9) countries might still need to use those in case the generic efficacy is not accepted.

[15] **Additional references**. One member country proposed to add pest-commodity listings along with respective references, to further support the extrapolation of the irradiation treatment schedule to all fruits and vegetables. The proposal was to include *Bactrocera dorsalis* in *Psidium guajava*, *B. tau* in *Cucurbita maxima* and *Carposina sasakii* in *Malus pumila*. However, the rationale for including pest species under section providing justification to the extrapolation appears to be for cases where data is available for more than one commodity per pest species, thereby supporting the view for extrapolation. The inclusions proposed by the commenter have only single commodity references and thus not consistent with those already listed ones in the draft annex. The TPPT agreed that altough the proposed additional papers are useful but as the already cited references compares the effect on multiple species on the same treatment, thus the additions are unnecessary.

[16] The TPPT

(1) *approved* the revised draft PT to be presented to the Standards Committee (SC) for approval for second consultation

(2) *approved* the responses to consultation comments as “TPPT responses” to be presented to the SC.

2.2 Irradiation treatment for *Sternochetus frigidus* (2017-036) – priority 2

[17] Mr Walther ENKERLIN, the Treatment Lead introduced the Treatment Lead summary, the supplemented information from the submitter and the revised draft[3].

[18] The submitter provided clarification on the additional questions requested by the TPPT at their 2019-07 meeting[4]. These are discussed further below.

[19] **Sex determination.** The TPPT requested clarification, if the researcher conducted the the sexing of all adults based on De Jesus *et al*. (2002). The submitter replied that the sexing of adults was indeed based on De Jesus L.R.A. *et al*. 2002 (now Lorenzana L.R.J.) who is also a coauthor in the papers cited in the submission to the IPPC. The TPPT was satisfied with the explanation.

[20] **Sex ratio**. The TPPT also asked the submitter clarification on the sex ration of males and females in the studied population of *Sternochetus frigidus*. In Table 1 of Obra *et al*. 2014, figures are given for the control egg production and the eggs per female. Based on these figures, the number of females in each control can be calculated as 64 (30,877/483) and 171 (87,431/510), giving as sex ratio of approximately 60:40 male:female.

[21] In the response to the question in the letter of 31 July 2018, the number of males and females in each of the treatments groups was given as 2275 and 2274 for the 150 Gy treatment and 740 and 740 for the 100 Gy treatment. This gives a sex ratio of almost exactly 50:50. The TPPT was questioning why the sex ratio in the control was so different. The submitter was requested to provide the raw data used to generate Table 1 in Obra et al 2014 which will be used to calculate the efficiency, in particular the counts of the control and the treatment group for each replicate.

[22] In the response the submitter indicated that in the study males and females emerged from irradiated mangos in groups of equal number and also in the control (10 males: 10 females per container), and that is why the sex ratio is 50:50. There were very few excess males and females for each batch/replicate i.e. without any pairs so they were not included any more.

[23] In Table 1, of Obra *et al*. 2014, figures are given for the control egg production and the eggs per female. Based on this figures, the number of females in each control can be calculated as 64 (30,877/483) and 171 (87,431/510), giving a sex ratio of approximately 60:40 (male:female). The figures of 483 and 510 eggs/female were obtained from a spreadsheet the cumulative mean eggs laid per female were computed based on live females not on initial total female that were used.

[24] If it was based on the number of initial females used in the experiment (not only on live females) the figures would be 386 and 397 eggs per female and that would give a 50:50 sex ratio that was done for pairing the adults (Table A). Hence, 30,877/385.73 = 80 females (control 1) and 87,431/397.00 = 220 females (control 2).

[25] The figures 386 and 397 should have been indicated (from table A) in table 1 of Obra *et a*l (2014) instead of 483 and 510 mean number of eggs per female.

[3] 2017-036, 04_TPPT_2020_Mar, 05_TPPT_2020_Mar

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

Table A. Raw data

Target Dose (Gy)	Batch/Rep	No. of Females	No. of Males	Total No. of Eggs Laid	No. of Eggs Laid/Female*
Control	1	80	80	30,877	385.73
100 Gy	1	740	740	95	Only 1 female laid eggs
Control	1	70	70	29,304	418.62
	2	70	70	25,747	367.81
	3	80	80	32,380	404.75
	Total	220	220	87,431	Ave. = 397.06
150 Gy	1	654	655	0	–
	2	740	740	0	–
	3	880	880	0	–
	Total	2,274	2,275	0	

*For the control for 150 Gy, mean number of eggs laid per female based on the initial number of females used in the pairing/mating.

[26] The TPPT agreed that the explanations provided for the apparent difference in the sex ratios of the control versus the treatments are satisfactory. It was noted that assessing the sex ratio (number of females) based on average oviposition is not a reliable way of estimating sex ratio. The raw data (Table A) clearly indicates that the numbers used where 50:50.

[27] **Number of replicates**. The TPPT queried why the number of replicates between treatments is different. The submitter explained that based on the dose-response tests (Obra et al 2013), 100 Gy appeared to be sufficient to prevent reproduction. Therefore, for a large scale confirmatory test 100 Gy was used that resulted in one adult female laying infertile eggs (n=95). The stringent criterion for efficacy was complete sterility (no oviposition), hence, it was decided to discontinue the 100 Gy dose. The treatment dose was subsequently increased to 150 Gy which was evaluated over three replications.

[28] The TPPT agreed that the explanation provided for the difference in the number of replicates is satisfactory, but queried whether there is a reason to test 150 Gy and not a lower dose such as 125 Gy for example.

[29] **Dose.** The submitter explained, that150 Gy was used because it was the next higher dose in the dose-response tests. For the large-scale confirmatory test, there was a possibility to use a target dose 125 Gy, but the minimum absorbed dose would overlap with the maximum dose of the 100 Gy target dose based on dosimetry data.

[30] The TPPT agreed that explanation provided is satisfactory since the dose used (150 Gy) is the next highest dose and lower doses such as 125 Gy would result in overlap with the maximum dose target dose which was in this case 100 Gy.

[31] The TPPT

(3) *approved* the draft PT to be presented to the Standards Committee (SC) for approval for first consultation.

3. Other Business

3.1 IYPH – International Plant Health Conference (Helsinki, Finland)

[32] The TPPT was informed of the situation regarding the organization of the International Plant Health Conference (IPHC), Paasitorni Conference Centre Helsinki Finland to be held on the 05-08 October 2020[5].

[33] The TPPT

(4) *requested* the SC to approve the TPPT's participation in the IPHC

4. Close of the Meeting

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

[5] 06_TPPT_2020_Mar, 07_TPPT_2020_Mar

Appendix 1: Agenda

2020 MARCH 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_Mar	KISS / ALL
2.	TPPT work programme	All submissions: https://www.ippc.int/en/work-area-pages/draft-phytosanitary-treatments-and-relevant-documents/	
2.1	Irradiation treatment for the genus *Anastrepha* (2017-031) – priority 1 - Draft PT: 2017-031 - Treatment lead summary - Compiled comments	 2017-031 02_TPPT_2020_Mar 03_TPPT_2020_Mar	SMYTH/ HALLMAN
2.2	Irradiation treatment for *Sternochetus frigidus* (2017-036) - Draft PT: 2017-036 - Responses from the submitter - Treatment lead summary	 2017-036 04_TPPT_2020_Mar 05_TPPT_2020_Mar	ENKERLIN
3.	Other business		
3.1	IYPH – International Plant Health Conference (Helsinki, Finland)	https://www.ippc.int/static/media/uploads/iyph/2019/07/26/IPHC_Programme_2019-07.pdf 06_TPPT_2020_Mar 07_TPPT_2020_Mar	KISS/ ALL
4.	Close of the meeting	-	KISS