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REPORT

Technical Panel on Phytosanitary Treatments October, 2017

**Virtual meeting
04 October 2017**

IPPC Secretariat

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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 “Secretariat”) Lead for Technical Panel on Phytosanitary Treatments (TPPT) chaired the meeting and welcomed the following participants:

1. Mr David OPATOWSKI (Steward of the TPPT)
2. Mr Toshiyuki DOHINO (Japan)
3. Mr Scott MYERS (USA)
4. Mr Michael ORMSBY (New Zealand)
5. Mr Andrew PARKER (FAO/IAEA)
6. Mr Matthew SMYTH (Australia)
7. Mr Eduardo WILLINK (Argentina)
8. Ms Adriana G. MOREIRA (IPPC Secretariat, Lead)
9. Ms Janka KISS (IPPC Secretariat, support)

[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: Evaluation of phytosanitary treatment submissions

[5] The Secretariat informed the TPPT that the phytosanitary treatment (PT) submissions and all available supporting documentation are posted on the TPPT restricted work area². Appendix 2 contains the list of the submissions to date. The first part lists all the submissions that were already evaluated by the TPPT and the priorities that were agreed to from previous meetings. The second part lists the submissions that have not yet been reviewed by the whole panel. The panel was informed that these PTs submissions will be presented to the Standards Committee (SC) for their consideration for inclusion on the List of Topics for IPPC standards and consequently the TPPT work programme.

2.1 Generic irradiation treatment against insects, except Lepidoptera larvae and pupae (2017-030)

[6] The Lead for the submission, Mr Guy HALLMAN, was unable to attend, but the TPPT discussed the checklist for evaluating treatment submissions and prioritization score sheet³ for the “Generic irradiation treatment against insects, except Lepidoptera larvae and pupae (2017-030)”.

[7] The submission suggested a dose of 300 gray (Gy) to eliminate all pests from the Insecta class, except Lepidoptera larvae and pupae, based on two references^{4,5}.

¹ TPPT membership list: <https://www.ippc.int/en/publications/81655/>

² Submissions for phytosanitary treatments: <https://www.ippc.int/en/work-area-publications/84471/>

³ 04_TPPT_2017_Oct

⁴ Bakri A, Heather N, Hendrichs J, Ferris I. 2005. Fifty years of radiation biology in entomology: Lessons learned from IDIDAS. *Annals of the Entomological Society of America* 98: 1-12.

⁵ Hallman G.J., 2016, Generic phytosanitary irradiation dose of 300 Gy proposed for the Insecta excluding pupae and adult Lepidoptera, *Florida Entomologist* Vol. 96, Special Issue 2, ISSN: 1938-5102, and various other references cited within this paper.

- [8] The TPPT noted that they already considered a similar treatment at a higher dose (400 Gy) in 2012 and that it had been rejected based on insufficient evidence. However, since then, more studies have accumulated and showed no contradiction with the efficacy of 300 Gy, as indicated in this submission.
- [9] In the summary of the evaluation, the lead suggested that there is sufficient information to support the historical evidence. Therefore, it should suffice to warrant its serious and more in depth consideration by the TPPT.
- [10] It was mentioned that some years ago, a contracting party approved a dose of 400 Gy for all Insecta, except pupal and adult Lepidoptera, after an earlier proposal with a dose of 300 Gy for all Insecta and phytophagous mites. The proposed 300 Gy dose was raised to 400 Gy based entirely on one study that found that one stored product beetle (not of quarantine significance) might require up to 400 Gy to control, and that might mean that other, untested insects may also require > 300 Gy (but < 400 Gy) to control. Mites were excluded in subsequent discussion because it was concluded that 400 Gy might be insufficient to eradicate mites.
- [11] A history of using the 400 Gy dose without incident for ~20 years and the use of 250 Gy for many of the groups of pests in the Insecta in some Pacific countries since 2004, further lend historical evidence to support a dose of 300 Gy against all Insecta except pupal and adult Lepidoptera.
- [12] One TPPT member outlined the importance of such a general treatment noting that the science has advanced a lot due to new research findings since the TPPT last considered generic treatments.
- [13] Another member highlighted that to apply the same procedure, as agreed earlier in the case of generic treatments (namely to gather the economically important species of the insect group and find the most resistant one), would mean a lot of work, and suggested to consider assigning a lower priority to this treatment, giving appropriate time to the TPPT to gather all the necessary information related to this submission.
- [14] The TPPT debated whether to assign priority 2 or 3 to the submission, but after some consideration, the TPPT assigned a priority 3 (subject to the agreement of the treatment lead) as not all countries are using irradiation, and a lot of other useful treatments were submitted and are awaiting review.
- [15] The TPPT
- (1) *recommended* the “Generic irradiation treatment against insects, except Lepidoptera larvae and pupae (2017-030)” to the Standards Committee (SC) for inclusion on the List of Topics for IPPC standards i.e. to for inclusion into the TPPT work programme, and Mr Guy HALLMAN as the Treatment Lead, so the TPPT can assess better the information of the submitter.
 - (2) *asked* the treatment lead to review the priority assigned to this treatment submission to be discussed at next TPPT virtual meeting.
 - (3) *Asked* the submitter to provide a list of major pests of economic importance with information on the treatment end-point, the tested life stage, the effective dose and the source of the information (reference) for each species.

2.2 Generic irradiation treatment for Curculionidae (Coleoptera) (2017-016)

- [16] The Lead for the submission, Mr Daojian YU, was unable to attend the 2017 October virtual meeting, but another TPPT member, Mr Matthew SMYTH, presented the documents in his behalf. The TPPT discussed the checklist for evaluating treatment submissions and prioritization score sheet⁶ for the Generic irradiation treatment for Curculionidae (Coleoptera) (2017-016).

⁶ 05_TPPT_2017_Oct

- [17] The submission suggested a dose of 150 Gy based on two references^{7,8}, and is supported with a list of irradiation doses for 16 Curculionid species and the related references. One member mentioned that a radiation dose of 300 Gy was approved for mango seed weevil (USDA APHIS, 2006), but doses as low as 100 Gy have been shown to sterilize this weevil (Follett, 2002). The closely related mango pulp weevil, *Sternochetus frigidus*, was sterilized in preliminary studies at a radiation dose of 100 Gy (Obra et al., 2013); large-scale confirmatory tests showed complete adult sterility at a target dose of 150 Gy (maximum dose of 165 Gy) were used to gain some market accesses (Obra et al. 2014).
- [18] One TPPT member highlighted that a generic treatment for weevils may be complicated by the recent merger of bark beetles, previously a distinct family Scolytidae, as a subfamily Scolytinae within the Curculionidae. The TPPT agreed to request additional information from the submitter, information to explain if the subfamily was considered or not when recommending the irradiation dose, so the TPPT can further and better assess this treatment. However the TPPT agreed that this treatment may be a very useful for IPPC contracting parties, therefore agreed to recommend this treatment to be included on the List of Topics for IPPC standards (i.e. to be included in the TPPT work programme).
- [19] The TPPT noted that irradiation treatments are currently somewhat more expensive than alternatives and that there are other irradiation treatments submissions with more solid data, thus the TPPT agreed to modify the priority 1 to priority 2.
- [20] The TPPT
- (4) *recommended* the “Generic irradiation treatment for Curculionidae (Coleoptera) (2017-016)” to the Standards Committee (SC) for inclusion on the List of Topics for IPPC standards i.e. to be included in the TPPT work programme with priority 2, and Mr Daojian YU as the Treatment Lead, so the TPPT can assess better the information of the submitter.

2.3 Cold treatment of Australian Stone fruit against Mediterranean fruit fly and Queensland fruit fly (2017-022)

- [21] The Lead for the submission, Mr Toshiyuki DOHINO, introduced the checklist for evaluating treatment submissions and prioritization score sheet⁹ for the “Cold treatment of Australian Stone fruit against Mediterranean fruit fly and Queensland fruit fly (2017-022)”.
- [22] He explained that there were extensive research done on two fruit flies species: *Ceratitis capitata* and *Bactrocera tryoni* using laboratory colonies and natural infestation methods. The experiments were done on several stone fruits (nectarine, plum, peach, and nectarine). He noted that the documentation that was submitted to support the submission was confidential.
- [23] The Lead outlined that the recommended schedules for *Ceratitis capitata* are 1°C or below for 16 days or 3°C or below for 20 days, tested on cherry, nectarine, plum and peach.
- [24] The recommended schedules for *Bactrocera tryoni* are 1°C or below for 14 days or 3°C or below for 14 days, tested on cherry, nectarine and plum.
- [25] The most resistant life stage was determined in each tested fruit species and it differs sometimes between fruit species.
- [26] The TPPT agreed to evaluate the data separately for the two fruit fly species, and to remove the “Australian” from the title.

⁷ Barkai-Golan, R. and P. A Follett. 2017. *Irradiation for Quality Improvement, Microbial Safety and Phytosanitation of Fresh Produce*. Academic Press, Elsevier: Amsterdam.

⁸ Hallman, G. J. 2016. Generic Phytosanitary irradiation treatment for “true weevils” (Coleoptera: Curculionidae) infesting fresh commodities. *Fla. Entomol.* 99 (2): 197-201.

⁹ 06_TPPT_2017_Oct

- [27] The Lead queried whether to divide the treatment schedule not only into different fruit fly species but further separate it for each fruit species. Nevertheless, the TPPT agreed to recommend the treatment for inclusion on the List of Topics for IPPC standards (i.e. TPPT work programme) for now and postponed the decision whether to divide it further for later, once the treatment is thoroughly evaluated.
- [28] The TPPT Steward queried the reason in having two different schedules for *Bactrocera tryoni* temperatures, both for 14 days. One TPPT member clarified that there might be a difference in the efficacy, although it is not yet calculated.
- [29] The TPPT noted that the supporting documentation is not publically available and strongly encouraged the submitter to make this information available before the first consultation starts, referring to ISPM 28 (*Phytosanitary treatments for regulated pests*) that states: if essential information is not available, it might affect the adoption of a particular treatment.
- [30] The TPPT decided to modify the priority of the treatment to priority 1 based on the criteria as it showed a high feasibility of implementation at global levels as these are pests of major concern and also because it is a cold treatment, which may help countries to open markets.
- [31] The TPPT
- (5) *recommended* the “Cold treatment of stone fruit against *Ceratitis capitata* (2017-022A)” and the “Cold treatment of stone fruit against *Bactrocera tryoni* (2017-022B)” to the Standards Committee (SC) for inclusion on the List of Topics for IPPC standards (i.e. to be included in the TPPT work programme) with priority 1, and Mr Toshiyuki DOHINO as the Treatment Lead, so the TPPT can assess better the information of the submitter.
 - (6) *encouraged* the submitter to make this information available before the first consultation starts referring to ISPM 28 (*Phytosanitary treatments for regulated pests*) that suggests if essential information is not available, it might affect the adoption of a particular treatment

2.4 Irradiation treatment for light brown apple moth *Epiphyas postvittana* on all fresh commodities (2017-018)

- [32] The Lead for the submission, Mr Daojian YU, was unable to attend the 2017 October TPPT virtual meeting, thus Mr Matthew SMYTH introduced the checklist for evaluating treatment submissions and prioritization score sheet¹⁰ for the Irradiation treatment for light brown apple moth *Epiphyas postvittana* on all fresh commodities (2017-018).
- [33] The submission suggested a dose of 200 gray to eliminate the pest. The confirmatory trials were conducted on insects raised on artificial diet but the research also used apples and peppers, to demonstrate the equivalence of natural and artificial diets.
- [34] Linear regression was used to estimate the efficacy, and the TPPT decided to request the submitter to explain why this method was used over more standard non-linear regression models (e.g. probit and logit) to estimate dose efficacy, as the effect on sterility might increase in a nonlinear fashion. The TPPT decided to request clarification on this from the submitter.
- [35] The TPPT highlighted, that pupae are more radio tolerant than the life stages tested and are usually not present, but may be associated with certain commodities (e.g. grapes). So, the most tolerant life stage may require further considerations by the TPPT.
- [36] The submission suggested that the treatment is applicable to all fresh commodities and this might have to be considered later. This issue will be evaluated later in the more detailed assessment. Thus, the TPPT agreed to recommend this treatment to be included on the List of Topics for IPPC standards (i.e. TPPT work programme).

¹⁰ 07_TPPT_2017_Oct

[37] The TPPT

- (7) *recommended* the “Irradiation treatment for *Epiphyas postvittana* on all fresh commodities (2017-018)” to the Standards Committee (SC) for inclusion on the List of Topics for IPPC standards (i.e. TPPT work programme) with priority 2, and Mr Daojian YU as the Treatment Lead, so the TPPT can assess better the information of the submitter.
- (8) *request* that the submitter provide further clarification on the linear regression that was used to estimate the efficacy.

3. Other business

[38] The TPPT agreed to modify the next virtual meeting date to 02 November 2017.

4. Close of the meeting

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

Appendix 1: Agenda

**2017 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 and introductions	02_TPPT_2017_Oct	MOREIRA / ALL
1.2 Adoption of the agenda and election of the rapporteur	01_TPPT_2017_Oct	MOREIRA / ALL
2. TPPT work programme: Evaluation of treatment submissions		
❖ List of submitted treatments	03_TPPT_2017_Oct	
❖ Submissions and supporting documents	Link to the treatments submission forms and supporting data	
2.1 Generic irradiation treatment against insects, except Lepidoptera larvae and pupae. (2017-030)		
❖ Checklist for evaluating treatment submissions and Prioritization score sheet	04_TPPT_2017_Oct	-
2.2 Generic irradiation treatment for Curculionidae (Coleoptera) (2017-016)		
❖ Checklist for evaluating treatment submissions and Prioritization score sheet	05_TPPT_2017_Oct	SMYTH
2.3 Cold treatment of Australian Stone fruit against Mediterranean fruit fly and Queensland fruit fly (2017-022)		
❖ Checklist for evaluating treatment submissions and Prioritization score sheet	06_TPPT_2017_Oct	DOHINO
2.4 Irradiation treatment for light brown apple moth <i>Epiphyas postvittana</i> on all fresh commodities (2017-018)		
❖ Checklist for evaluating treatment submissions and Prioritization score sheet	07_TPPT_2017_Oct	SMYTH
3. Other business	-	MOREIRA
4. Close of the meeting	-	MOREIRA

Appendix 2: List of submitted treatments**LIST OF SUBMITTED TREATMENTS IN RESPONSE TO THE CALL FOR
PHYTOSNITARY TREATMENTS BEFORE THE 5 JUNE***(Last updated 2017-10-04)*

No.	Topic No.	Title (coloured according to the type of treatment)	Submitted by	TPPT Lead	The supporting documents are publicly available	Recommended priority for the LoT *
1	2017-017	Irradiation treatment for spotted wing drosophila <i>Drosophila suzukii</i> on all fresh commodities	USA	Smyth	Yes	1
2	2017-028	Sulfuryl fluoride fumigation treatment for <i>Chlorophorus annularis</i> on bamboo articles	China	Willink	Yes	2
3	2017-011	Irradiation treatment for eggs and larvae of the family Tortricidae (generic)	USA	Bowman	Yes	1
4	2017-012	Irradiation treatment for all stages of the family Pseudococcidae (generic)	USA	Yu	Yes	1
5a	2017-023A	Cold treatment of <i>Ceratitis capitata</i> on table grapes	Australia	Dohino	No	1
5b	2017-023B	Cold treatment of <i>Bactrocera tryoni</i> on table grapes	Australia	Dohino	No	1
6	2017-024	Heat treatment of wood chips	Belgium	Ormsby	Yes	3
7	2017-029	Cold treatment for <i>Thaumatotibia leucotreta</i> on Citrus spp.	South Africa	Wang	No	2
8	2017-030	Generic irradiation treatment against insects, except Lepidoptera larvae and pupae.	Mexico	Hallman	Yes	3 (?)
9	2017-016	Generic irradiation treatment for Curculionidae (Coleoptera)	USA	Yu	Yes	2
10a	2017-022A	Cold treatment of <i>Ceratitis capitata</i> on stone fruit	Australia	Dohino	No	1
10b	2017-022B	Cold treatment of <i>Bactrocera tryoni</i> on stone fruit	Australia	Dohino	No	1
11	2017-018	Irradiation treatment for <i>Epiphyas postvittana</i> on all fresh commodities	USA	Yu	Yes	2
12	2017-013	Cold treatment for the peach fruit fly, <i>Bactrocera zonata</i> on oranges <i>Citrus x sinensis</i>	USA	Dohino	Yes	2
13	2017-031	Irradiation Treatment against fruit flies of the family <i>Anastrepha</i> spp. (Dose Modification)	Mexico	Hallman	No	2

No.	Topic No.	Title (coloured according to the type of treatment)	Submitted by	TPPT Lead	The supporting documents are publicly available	Recommended priority for the LoT *
14	2017-021	Irradiation treatment for European grapevine moth <i>Lobesia botrana</i> eggs and larvae on all fresh commodities	USA	Bowman	Yes	2
15	2017-026	Irradiation treatment for <i>Carposina sasakii</i>	China	Parker	Yes	2
16	2017-015	Irradiation treatment for oriental fruit fly <i>Bactrocera dorsalis</i> on all fresh commodities	USA	Parker	Yes	2
17	2017-014	Irradiation treatment for ants (Hymenoptera: Formicidae) hitchhiking on fresh commodities	USA	Myers	Yes	3
18	2017-025	Irradiation treatment for <i>Bactrocera tau</i>	China	Parker	Yes	3
19	2017-027	Irradiation treatment for <i>Pseudococcus jackbeardsleyi</i>	China	Parker	Yes	3
20	2017-020	Irradiation treatment for coffee berry borer <i>Hypothenemus hampei</i> on coffee berries	USA	Bowman	Yes	3
21	2017-019	Irradiation treatment for western flower thrips <i>Frankliniella occidentalis</i> on all fresh commodities	USA	Dohino	Yes	3
22	2017-034	Hydrogen cyanide fumigation treatment for pine wood nematode and wood boring beetles in debarked wood	Czech Republic	Smyth	Only public: "File DOC IV B_PT8"	3
23	2017-035	Ethanedinitrile (EDN) treatment of wood for insect pests	New Zealand	Myers	Yes	3
24	2017-033	Hydrogen cyanide fumigation treatment for <i>Ditylenchus dipsaci</i> in seed bulbs of garlic	Czech Republic	Smyth	Yes	3
25	2017-032	Hydrogen cyanide fumigation treatment for rodents, insects and mites in containers	Czech Republic	Smyth	No	4

* The recommended priority for the List of Topics of IPPC standards¹¹ vary from 1 to 4, where 1 is the highest priority, and 4 is the lowest. The TPPT assigned priorities to the treatments submissions based impact on managing the pests in international trade on their 2017-07 meeting.

= The submissions in the list above the double line were already discussed by the TPPT. The TPPT may assign a new priority to each submission when recommending it to the SC.

¹¹ List of Topics: <https://www.ippc.int/en/core-activities/standards-setting/list-topics-ippc-standards/>