Food and Agriculture Organization of the United Nations

International Plant Protection Convention

REPORT

Technical Panel on Phytosanitary Treatments

March, 2018

Virtual meeting

21 March 2018

IPPC Secretariat

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 Technical Panel on Phytosanitary Treatments (TPPT) chaired the meeting and welcomed the following participants:

1. Mr David OPATOWSKI (TPPT Steward)
2. Mr Glenn BOWMAN (Australia)
3. Mr Toshiyuki DOHINO (Japan)
4. Mr Michael ORMSBY (New Zealand)
5. Mr Scott MYERS (USA)
6. Mr Andrew PARKER (International Atomic Energy Agency)
7. Mr Matthew SMYTH (Australia)
8. Mr Yuejin WANG (China)
9. Mr Eduardo WILLINK (Argentina)
10. Mr Daojian YU (China)
11. Mr Guy HALLMAN (Invited expert)
12. Ms Adriana G. MOREIRA (IPPC Secretariat, lead)
13. 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 Michael ORMSBY was elected as the Rapporteur.

2. TPPT Work Programme: Evaluation of Treatment Submissions

[5] The Secretariat informed the TPPT that one additional treatment submission had been received in response to the Call for phytosanitary treatments, this being from Turkey on the Irradiation treatment of fresh commodities against *Liriomyza sativa*, *L. trifolii* and *L. huidobrensis* (2018-001).

[6] All the submissions and the non-confidential supporting documents are publicly available on the IPP[2].

[7] The List of submitted treatments[3] was presented to the TPPT, and the Secretariat explained that it had been updated with the recent submissions. Mr Andrew PARKER was selected as the Lead for the Phytosanitary irradiation treatment of fresh commodities against *Liriomyza sativa*, *L. trifolii* and *L. huidobrensis* (2018-001), as he generously volunteered.

[8] The Secretariat explained that almost all phytosanitary treatment submissions received to date had been evaluated by the assigned Leads. After this meeting all submissions will have been reviewed by the TPPT with the exception of two. The remaining two are the CATTS (Controlled Atmosphere/Temperature Treatment System) treatments against codling moth (*Cydia pomonella*) and western cherry fruit fly (*Rhagoletis indifferens*) in cherry (2017-037) and the CATTS (Controlled Atmosphere/Temperature Treatment System) treatments against codling moth (*Cydia pomonella*) and oriental fruit moth (*Grapholita molesta*) in apple (2017-038). The plan is to evaluate and review these submissions during the next face-to-face meeting of the TPPT.

---

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

[2] Calls for treatments: https://www.ippc.int/en/core-activities/standards-setting/calls-treatments/

[3] 03_TPPT_2018_Mar

2.1 Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027)

[9] The Lead for the submission, Mr Andrew PARKER, introduced the Checklist for evaluating treatment submissions and Prioritization score sheet[4] for the Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027).

[10] The proposed treatment schedule is a minimum absorbed dose of 166 Gy to prevent F1 development past the second instar in *Pseudococcus jackbeardsleyi*.

[11] There is 95% confidence that the treatment according to this schedule prevents F1 development past the second instar for eggs of not less than 99.9982% of adults of *Pseudococcus jackbeardsleyi*.

[12] The proposal is generally well presented and includes the relevant data and efficacy calculations, with the exception of the method for calculating the number of treated insects, which is missing. Species identification methodology and retention of voucher specimens should also be clarified.

[13] Three publications support the proposed treatment[5]. There is neither analysis of the potential cost of treatment nor of the potential cost of an infestation.

[14] One member queried about the target regulated article, and whether ornamental plants could be included in the scope of this treatment. It was highlighted that the submission specifies the target regulated articles as being "all fruit and vegetables that are hosts of *Pseudococcus jackbeardsleyi*". The TPPT discussed whether research done on fruits and vegetables would apply to ornamental plants, and that proper justification would be needed to expand the scope. The TPPT decided to further consider the issue of the regulated article once the treatment is added to the work programme.

[15] The TPPT agreed to recommend the submission to the Standards Committee (SC) for addition to the work programme, and to ask the submitter to provide more information on the method of calculating the number of treated insects and to clarify species identification and the retention of voucher specimens.

[16] The TPPT:

(1) *recommended* the "Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027)" to the Standards Committee (SC) for inclusion in the *List of topics for IPPC standards* (i.e. for inclusion in the TPPT work programme), with priority 3 and Mr Andrew PARKER as the Treatment Lead, so that the TPPT can better assess the information from the submitter

(2) *asked* the submitter to provide the method of calculating the number of treated insects and clarify the methodology for species identification and retention of voucher specimens.

2.2 Irradiation treatment for *Hypothenemus hampei* on coffee berries (2017-020)

[17] The Lead for the submission, Mr Glenn BOWMAN, introduced the Checklist for evaluating treatment submissions and Prioritization score sheet[6] for the Irradiation treatment for *Hypothenemus hampei* on coffee berries (2017-020).

---

[4] 04_TPPT_2018_Mar

[5] Guoping, Z., Ying, S., Qing, Y., Lang, X., Bo, L., Yuejin, W. & Qiaoling, W. 2016. Phytosanitary irradiation of Jack Beardsley mealybug (Hemiptera: Pseudococcidae) females on rambutan (Sapindales: Sapindaceae) fruits. *Florida Entomologist*, 99 (Special issue 2): 114–120.

Hofmeyr, H., Doan, T.T., Indarwatmi, M., Seth, R. & Zhan, G. 2016. Development of a generic radiation dose for the postharvest phytosanitary treatment of mealybug species (Hemiptera: Pseudococcidae). *Florida Entomologist*, 99 (Special issue 2): 191–196.

Ying, S., Lili, R., Yongjie, L., Yuejin, W., Yi, J., Qiaolin, W. & Guoping, Z. 2013. [The primary results of the impact on the development and reproduction of Jack Beardsley mealybug irradiated with Colbot-60 gamma rays.] *Plant Quarantine*, 27(6): 51–55 (in Chinese with English abstracts).

[6] 05_TPPT_2018_Mar

[18] The proposed treatment schedule is a minimum absorbed dose of 100 Gy to prevent the emergence of *Hypothenemus hampei* (coffee berry borer).

[19] There is 48% confidence that the treatment according to this schedule prevents emergence in not less than 99.99% of adults of *Hypothenemus hampei*. This was calculated from 6 598 treated adults which laid a total of 39 eggs, none of which hatched (100% sterility).

[20] The data sheet provided along with the submission is the only supporting information and it contains limited information that is open to interpretation. The confidence level reported in the submission is quite low, and the data available to support the proposed treatment are very limited.

[21] The TPPT discussed the submission and recognized the importance of the pest due to its cryptic nature and the difficulty in controlling it.

[22] The Lead explained that the trials were conducted using adult specimens, and the most tolerant life stage of the pest was not determined. The reason for choosing the particular doses used in the trial is unclear, and the TPPT wondered why higher doses were not considered. The TPPT suggested that 125 Gy should be tested.

[23] According to the submission, after the treatment a "fresh diet" was fed to the adult *Hypothenemus hampei* but no further information is provided on what the diet was. The Lead assumed that the adults after the treatment were observed for three weeks and not three months as indicated in the supporting documentation. The TPPT was concerned whether three weeks would be enough to see if the treated adults reproduce, especially as the control population did not seem to reproduce well either.

[24] The TPPT acknowledged the usefulness of such treatment, but did not recommend it for the work programme. However, the TPPT strongly encourages the submitter to resubmit this treatment at a later stage once the test results are published, more results are obtained at other irradiation doses, the tests to determine the most resistant life stage are conducted, and information on dosimetry is provided.

[25] The TPPT:

(3) *recommended* to the Standards Committee (SC) that the "Irradiation treatment for *Hypothenemus hampei* on coffee berries (2017-020)" <u>not</u> be included in the *List of topics for IPPC standards* (i.e. not be included in the TPPT work programme), as significantly more testing is required.

2.3 Irradiation treatment for *Frankliniella occidentalis* on all fresh commodities (2017-019)

[26] The Lead for the submission, Mr Toshiyuki DOHINO, introduced the Checklist for evaluating treatment submissions and Prioritization score sheet[7] for the Irradiation treatment for *Frankliniella occidentalis* on all fresh commodities (2017-019).

[27] The proposed treatment schedule is a minimum absorbed dose of 250 Gy to prevent reproduction in adults of *Frankliniella occidentalis.* The schedule is supported by some unpublished data submitted along with the treatment, but the details of the experiment were not described in this paper.

[28] The tests on which the schedule is based were conducted in Hawaii (dose–response test, large-scale test with adults of *Frankliniella occidentalis*) and in Australia (large-scale tests with mixed-age *Frankliniella occidentalis* or adults).

[29] The reported efficacy is 99.99% with a confidence level of approximately 56%, from more than 8 800 treated insects (5 025 adults, and another 3 800 mixed-age thrips), with no reproduction to the F1 larval stage (according to the unpublished tables in the manuscript attached to the submission).

[7] 06_TPPT_2018_Mar

[30] The TPPT discussed the efficacy, as the confidence level is relatively low. The TPPT clarified that the efficacy would need to be recalculated based on the available studies.

[31] The treatment Lead considered that even though the submission specifies the target regulated article as "fresh fruit and vegetables", all fresh commodities should be considered, including for example fresh flowers that are often infested by *Frankliniella occidentalis*.

[32] According to the submission form, the researchers considered the adult as the most tolerant life stage of the pest, and used natural infestation in their studies. The 250 Gy irradiation treatment resulted in no offspring in three weeks after treatment. The TPPT was concerned that three weeks might be too short a time period to determine the outcome of such a treatment.

[33] The TPPT decided to request information from the submitter to clarify the above issues, to explain more about how the study was conducted and how the efficacy was calculated, and to provide the published papers.

[34] Some TPPT members suggested the use of sources other than the submission, for example an Australian study in which they participated that is not yet published.

[35] The TPPT:

(4) *recommended* the "Irradiation treatment for *Frankliniella occidentalis* on all fresh commodities (2017-019)" to the Standards Committee (SC) for inclusion in the *List of topics for IPPC standards* (i.e. for inclusion in the TPPT work programme), with priority 3 and Mr Toshiyuki DOHINO as the Treatment Lead, so that the TPPT can better assess the information from the submitter

(5) *asked* the submitter to provide the unpublished study in order to evaluate its efficacy.

2.4 Hydrogen cyanide fumigation treatment for *Ditylenchus dipsaci* in seed bulbs of garlic (2017-033)

[36] The Lead for the submission, Mr Matthew SMYTH, introduced the Checklist for evaluating treatment submissions and Prioritization score sheet[8] for the Hydrogen cyanide fumigation treatment for *Ditylenchus dipsaci* in seed bulbs of garlic (2017-033).

[37] The proposed schedule of hydrogen cyanide (HCN) fumigation is 20 grams m^{-3} for 12, 18 or 24 hours at 24 °C. No chamber load was specified. Of 40 220 nematodes treated there were 162 survivors in the 24-hour schedule. The effective dose was not stated.

[38] The submission was supported by one reference[9] supplied along with the submission.

[39] The application has been submitted to show that HCN shows promise as a fumigant for *Ditylenchus dipsaci* associated with garlic bulbs for planting. Technical issues that require resolution include the following:

- The level of replication (number of separate fumigations) needs to be clarified, together with the number of garlic bulbs tested (number per variety per fumigation).
- The number of individual life stages tested is not clear from the material presented. A summary of the level of infestation for each variety per fumigation would provide clarity to confirm the number of individuals treated. This would help in any further review (and analysis by the applicant) to identify the efficacy and confidence level achieved.
- The most tolerant life stage has not been identified. It is noted that garlic bulbs naturally infested with *Ditylenchus dipsaci* were used in the fumigation trials, which may have resulted in all life stages being treated. However, without confirmation of the life stages present and the

[8] 07_TPPT_2018_Mar

[9] Zouhar, M., Douda, O., Dlouhý, M., Lišková, J., Maňasová, M. & Stejskal, V. 2016. Using of hydrogen cyanide against *Ditylenchus dipsaci* nematode present on garlic. *Plant, Soil and Environment*, 62: 184–188.

identification of the most tolerant life stage, the efficacy presented has not been confirmed. For example, the fourth stage juvenile is known as a survival stage; it can enter a state of cryptobiosis (metabolic inactivity) and survive for some years under adverse conditions. Dormant *Ditylenchus dipsaci* may be more tolerant of HCN and it is not clear whether *Ditylenchus dipsaci* in this state are associated with garlic bulbs for planting.

- Laboratory efficacy trials did not replicate commercial fumigations as no packaging, which may affect sorption and the concentration–time product (CT), was used. The trial did not identify the chamber load (amount of garlic estimated in the fumigation chamber) used. Chamber load is known to affect fumigant concentration in chamber head space, and HCN is well known to have a high sorption factor (Bond, 1984). Chamber load is therefore considered a critical factor that needs to be controlled to verify HCN efficacy under commercial fumigations.
- A large number of individuals survived the most stringent schedule tested (n = 162). The proposed treatment is to manage a pest directly associated with host planting material. Although the treatment may be effective at reducing the commercial impact of the target pest, the level of survival would almost certainly result in the successful establishment of *Ditylenchus dipsaci* where the pest is currently absent. Continued survival of *Ditylenchus dipsaci* after treatment could lead to HCN resistance.

[40] The proposed treatment is for planting material. The experiments demonstrated that HCN negatively impacted on garlic bulb plant growth with only two of the nine cultivars unaffected after a 24-hour fumigation (five of the varieties tested failed to sprout after a 24-hour fumigation). More stringent schedules (e.g. higher CT) to increase treatment efficacy on *Ditylenchus dipsaci* are also likely to further reduce plant growth based on the evidence presented. This information brings into question whether HCN, even if considered an effective pest treatment, would be adopted in commercial garlic propagation.

[41] The TPP agreed that, considering the issues mentioned above, they would not recommend the treatment proposal for the work programme.

[42] The TPPT:

(6) *recommended* to the Standards Committee (SC) that the “Hydrogen cyanide fumigation treatment for *Ditylenchus dipsaci* in seed bulbs of garlic (2017-033)” not be included in the *List of topics for IPPC standards* (i.e. not be included in the TPPT work programme).

2.5 Hydrogen cyanide fumigation treatment for rodents, insects and mites in containers (2017-032)

[43] The Lead for the submission, Mr Matthew SMYTH, introduced the Checklist for evaluating treatment submissions and Prioritization score sheet[10] for the Hydrogen cyanide fumigation treatment for rodents, insects and mites in containers (2017-032).

[44] The submitter proposed to use HCN at 10 grams m^{-3} for 24 hours. The schedule temperature was not stated. The submission was supported by commercial in-confidence material supplied by the applicant.

[45] The target regulated article was also not specified, but the trial supporting the treatment used empty containers (buildings).

[46] The target pests are as follows:

- rodents:
    - *Rattus norvegicus* – Norway rat
    - *Rattus rattus* – black rat
    - *Mus musculus* – house mouse

[10] 08_TPPT_2018_Mar

- insects:
  - *Blattella germanica* – German cockroach
  - *Tribolium confusum* – confused flour beetle
  - *Tribolium castaneum* – red flour beetle
  - *Oryzaephilus surinamensis* – saw toothed grain beetle
  - *Plodia interpunctella* – Indian meal moth
  - *Ephestia kuehniella* – Mediterranean flour moth
- mites:
  - *Acarus siro* – flour mite
  - *Lepidoglyphus destructor* – storage mite
  - *Tyrophagus putrescentiae* – cheese mite.

[47] According to the submission, HCN shows promise as an alternative fumigant for common pests associated with flour mills. The TPPT appreciates the scale of the work undertaken to support the efficacy of HCN on pests in buildings. However, the data presented in the application do not clearly identify the actual number of individual pests treated in large-scale commercial fumigations. Technical issues that require resolution include the following:

- There is little to no information provided on the culturing of tested pests and how this may affect treatment efficacy.
- There was little or no replication in the large-scale confirmatory tests (n = 1 or 2 for mites and insects; n = 1 for rodents). However, it is noted that several independent buildings were fumigated, this providing information on fumigant distribution and concentration in a variety of structures. The structures fumigated and the test pests treated within a particular structure are not clear, however, and so actual HCN concentrations measured in individual buildings are not linked to mortality of tested pests (as presented in the application).
- The number of individual life stages tested is not clear from the material presented. A summary document would provide clarity and help in any further review (and analysis by the applicant) to identify the efficacy and confidence level achieved.
- In the commercial trials, the distribution of pests tested (mites and insects) through the buildings per floor is noted and supported. However, monitoring of HCN demonstrated a significant variation in concentration and CT throughout the buildings fumigated, including within an individual floor. Based on the information present, pests were positioned at one location on an individual floor. A wider distribution of test pests within an individual floor would need to be tested to allow for variation in fumigant concentration which could result in lower levels of mortality where HCN is lower.
- A treatment temperature has not been identified or stated by the applicant as part of the treatment schedule. Based on monitoring across insect and mite pests, a mean maximum temperature could be identified to apply to all species tested. For example, a maximum mean temperature of 23.9 °C was recorded on one floor during commercial fumigation for *Ephestia kuehniella*; this was the highest reported mean temperature across the pests tested.

[48] The TPPT agreed that, considering the issues mentioned above, they would not recommend the treatment proposal for the work programme.

[49] The TPPT:

(7) *recommended* to the Standards Committee (SC) that the "Hydrogen cyanide fumigation treatment for rodents, insects and mites in containers (2017-032)" not be included in the *List of topics for IPPC standards* (i.e. not be included in the TPPT work programme).

2.6 Irradiation treatment for *Sternochetus frigidus* (2017-036)

[50] The Lead for the submission, Mr Andrew PARKER, introduced the Checklist for evaluating treatment submissions and Prioritization score sheet[11] for the Irradiation treatment for *Sternochetus frigidus* (2017-036).

[51] The submitter proposed a minimum absorbed dose of 164 Gy to prevent oviposition in 99.99% of adult *S. frigidus* at the 95% level of confidence. The proposed dose would also be suitable to control for Tephritidae fruit flies as it is above the generic 150 Gy minimum absorbed dose (ISPM 28 (*Phytosanitary treatments for regulated pests*) PT 7 (Irradiation treatment for fruit flies of the family Tephritidae (generic)).

[52] The submission is supported by five references[12]. The target regulated articles are specified as "all fruits and vegetables that are hosts of *Sternochetus frigidus*". As the most common host is mango, the submission therefore presents a treatment that would be useful in relation to the trade in mangoes. The relatively low level of efficacy is explained in the main reference, but inconsistencies in the data in this paper need to be clarified.

[53] Firstly, the efficacy data are misstated in the proposal. According to the data in the original paper the efficacy was 99.934% inhibition of oviposition at the 95% confidence level by 164 Gy (in the paper this is expressed as 99.99% inhibition of oviposition at the 36.6% level of confidence) and 99.797% inhibition of egg hatch from irradiated adults at the 95% level of confidence.

[54] Secondly, there is an inconsistency in the original paper over the number of individual weevils used. For the 150 Gy confirmatory test three batches of 1 100 mangoes were irradiated, with 100 of these being a check sample. In the remaining 1 000 mangoes it is stated that 49.7% of fruit were infected with two weevils per fruit with a male:female ratio of 51:49. This gives approximately 500 females per replicate and a total of 1 500 females in the three replicates, not 4 549 females as in Table 1 of Obra *et al*. (2014). A similar inconsistency occurs in the 100 Gy trial.

[55] The TPPT agreed to recommend the submission for the TPPT work programme and to ask the submitter to clarify the issues mentioned above.

[56] The TPPT:

(8) *recommended* the "Irradiation treatment for *Sternochetus frigidus* (2017-036)" to the Standards Committee (SC) for inclusion in the *List of topics for IPPC standards* (i.e. for inclusion in the TPPT work programme), with priority 2 and Mr Andrew PARKER as the Treatment Lead, so that the TPPT can better assess the information from the submitter

---

[11] 09_TPPT_2018_Mar

[12] Hallman, G.J., Levang-Brilz, N.M, Zettler, J.L. & Winborne, I.C. 2010. Factors affecting ionizing radiation phytosanitary treatments, and implications for research and generic treatments. *Journal of Economic Entomology*, 103(6): 1950–1963.

Lorenzana, L.R.J. & Obra, G.B. 2013. Mass rearing technique for mango pulp weevil, *Sternochetus frigidus* (Fabr.) (Coleoptera: Curculionidae). *Journal of ISSASS (International Society for Southeast Asian Agricultural Sciences)*, 19(2): 75–81.

Lorenzana, L.R.J. & Obra, G.B. 2016. A protocol for transport of mango pulp weevil, *Sternochetus frigidus* (Fabricius.) (Coleoptera: Curculionidae) in the Philippines. *Journal of ISSASS (International Society for Southeast Asian Agricultural Sciences)*, 22(2): 91–97.

Obra, G.B., Resilva, S.S., Follett, P.A. & Lorenzana, L.R.J. 2014. Large-scale confirmatory tests of phytosanitary irradiation treatment against *Sternochetus frigidus* (F.) in Philippine super mango. *Journal of Economic Entomology*, 107 (1): 161–165.

Obra, G.B., Resilva, S.S. & Lorenzana, L.R.J. 2013. Irradiation as a potential phytosanitary treatment for the mango pulp weevil *Sternochetus frigidus* (Fabr.) (Coleoptera: Curculionidae) in Philippine mango. *Philippine Agricultural Scientist*, 96(2): 172–178.

(9) *asked* the submitter to provide clarification on the efficacy data and the number of individuals treated in the trial.

2.7 Phytosanitary irradiation treatment of fresh commodities against *Liriomyza sativa*, *L. trifolii* and *L. huidobrensis* (2018-001)

[57] The Lead for the submission, Mr Andrew PARKER, introduced the Checklist for evaluating treatment submissions and Prioritization score sheet[13] for the Phytosanitary irradiation treatment of fresh commodities against *Liriomyza sativa*, *L. trifolii* and *L. huidobrensis* (2018-001).

[58] The submission proposes exposing the commodity to a minimum absorbed dose of 175 Gy to prevent the formation of leaf mines by F1 offspring of *Liriomyza sativa*, *L. trifolii* and *L. huidobrensis*. Two publications[14] support the proposal. The first one supports the proposed schedule and the second is on the determination of the most tolerant life stage.

[59] The treatment submission lacks various details. Several of these can be supplied from the main reference but there are problems with interpreting the data given there as the table presenting the data is not explicit about what some of the data represent. In particular, the dose reporting gives a value ± a second value but this second figure is not defined as SD, SE or total measurement range so it is not possible to determine the actual maximum dose in each case.

[60] In view of this uncertainty, the Lead suggested that to meet the proposed dose of 175 Gy the third replicate for *L. huidobrensis* would need to be discounted, giving a total treated number of 8 919. It may also be necessary to remove the third replicate from the *L. sativa* data as the "uncertainty" is large and may represent a potential maximum dose greater than 175 Gy. This would also allow the calculation of efficacy.

[61] No efficacy was calculated in the submission. From the supplied reference the following may be calculated:

- *L. sativa* 99.972% at 95% confidence level (7 replicates)
- *L. trifolii* 99.971% at 95% confidence level (7 replicates)
- *L. huidobrensis* 99.966% at 95% confidence level (6 replicates).

[62] A further issue is the lack of evidence of identity of the regulated pests, and it is unfortunate that many of the actual doses applied in the confirmatory tests were well above the 150 Gy suggested by the initial tests.

[63] The TPPT agreed to recommend the submission for the TPPT work programme and to ask the submitter to clarify the issues mentioned above.

[64] The TPPT:

(10) *recommended* the "Phytosanitary irradiation treatment of fresh commodities against *Liriomyza sativa*, *L. trifolii* and *L. huidobrensis* (2018-001)" to the Standards Committee (SC) for inclusion in the *List of topics for IPPC standards* (i.e. for inclusion in the TPPT work programme), with priority 2 and Mr Andrew PARKER as the Treatment Lead, so that the TPPT can better assess the information from the submitter

(11) *asked* the submitter to provide clarification on the dose reporting, the identity of the regulated pests and the efficacy calculation.

[13] 10_TPPT_2018_Mar

[14] Ozyardimci, B., Aylangan, A., Ic, E. & Aydin, T. 2016. Phytosanitary irradiation against leafminers (Diptera: Agromyzidae) and radiotolerance of shelled peas, *Pisum sativum* (Fabales: Fabaceae). *Florida Entomologist*, 99(2): 171–177.

Yathom, S., Podava, R., Tal, S. & Ross, I. 1990. Effects of gamma radiation on the immature stages of *Liriomyza trifolii*. *Phytoparasitica*, 18: 117–124 (not supplied).

3. Other Business

[65] No other business was discussed.

4. Close of the Meeting

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

Appendix 1: Agenda

2018 MARCH VIRTUAL MEETING OF THE TECHNICAL PANEL ON PHYTOSANITARY TREATMENTS (TPPT)

21 March 2018

AGENDA

	AGENDA ITEM	DOCUMENT NO.	PRESENTER
1.	**Opening of the meeting**		
1.1	Welcome by the IPPC Secretariat and introductions	02_TPPT_2018_Mar	MOREIRA / ALL
1.2	Adoption of the agenda and election of the rapporteur	01_TPPT_2018_Mar	MOREIRA / ALL
2.	**TPPT work programme: Evaluation of treatment submissions**		
	❖ List of submitted treatments	03_TPPT_2018_Mar	
	❖ Submissions and supporting documents	Link to the treatments submissions	
2.1	Irradiation treatment for *Pseudococcus jackbeardsleyi* (2017-027)	04_TPPT_2018_Mar	PARKER
2.2	Irradiation treatment for *Hypothenemus hampei* on coffee berries (2017-020)	05_TPPT_2018_Mar	BOWMAN
2.3	Irradiation treatment for *Frankliniella occidentalis* on all fresh commodities (2017-019)	06_TPPT_2018_Mar	DOHINO
2.4	Hydrogen cyanide fumigation treatment for *Ditylenchus dipsaci* in seed bulbs of garlic (2017-033)	07_TPPT_2018_Mar	SMYTH
2.5	Hydrogen cyanide fumigation treatment for rodents, insects and mites in containers (2017-032)	08_TPPT_2018_Mar	SMYTH
2.6	Irradiation treatment for *Sternochetus frigidus* (2017-036)	09_TPPT_2018_Mar	PARKER
2.7	Phytosanitary irradiation treatment of fresh commodities against *Liriomyza sativa*Blanchard, *L. trifolii* (Burgess) and *L. huidobrensis* (Blanchard) (2018-001)	10_TPPT_2018_Mar	PARKER
3.	**Other business**	-	MOREIRA
4.	**Close of the meeting**	-	MOREIRA