

**DRAFT ANNEX TO ISPM 28: Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* (2009-109)**

Status box	
This is not an official part of the standard and it will be modified by the IPPC Secretariat after adoption.	
Date of this document	2017-11-27
Document category	Draft annex to ISPM 28
Current document stage	From SC to CPM-13 (2018)
Major stages	<p>2009 Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. 'Solo' submitted</p> <p>2010-07 TPPT reviewed treatment and requested additional information</p> <p>2012-05 SC noted the treatment is pending submission of data</p> <p>2012-12 TPPT requested additional information</p> <p>2013-02 TPPT sent Final notice letter to Submitter through Secretariat</p> <p>2013-05 Submitter responded</p> <p>2013-07 TPPT reviewed Submitter response and recommended to SC for consultation</p> <p>2013-09 TPPT approved treatment schedule (virtual meeting)</p> <p>2014-02 SC approved draft treatment for consultation via e-decision (2014_eSC_May_03)</p> <p>2014-07 First consultation</p> <p>2015-11 SC assigned the status "pending"</p> <p>2016-07 Modified by Treatment Lead in response to consultation comments</p> <p>2016-09 TPPT meeting; additional data or studies requested</p> <p>2016-11 SC noted the change in the title 2017-03 Submitter provided additional information</p> <p>2017-07 TPPT meeting revised based on additional information from the Submitter and recent research results</p> <p>2017-10 SC approved the draft treatment for adoption by CPM, via e-decision (2017_eSC_Nov_07)</p>
Treatment Lead	<p>2009-01 Ms Alice BAXTER (ZA)</p> <p>2012-12 Mr Guy HALLMAN (US)</p>
Notes	<p>2013-09 Formatted in accordance with new requirements</p> <p>2013-09 Secretariat started using previously revised footnote relating to treatment adoption</p> <p>2014-04 Editor edited the text</p> <p>2015-05 Pending research results</p> <p>2016-11 Title change: removal of the variety 'Solo' as the TPPT did not find any evidence to support any possible varietal or cultivar differences in <i>Carica papaya</i> (see section 5.2 of the TPPT 2016 meeting report)</p> <p>2017-07 TPPT revised this draft PT and concluded from the research results that the response to vapour heat treatment does not differ between different populations of <i>B. dorsalis</i></p> <p>2017-09 Edited</p>

Scope of the treatment

- [1] This treatment describes the vapour heat treatment of fruit of *Carica papaya* to result in the mortality of eggs and larvae (all instars) of *Bactrocera dorsalis* at the stated efficacy¹.

Treatment description

- [2] **Name of treatment:** Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya*
- [3] **Active ingredient:** n/a
- [4] **Treatment type:** Physical (vapour heat)
- [5] **Target pest:** *Bactrocera dorsalis* (Hendel, 1912) (Diptera: Tephritidae)
- [6] **Target regulated articles:** Fruit of *Carica papaya*

Treatment schedule

- [7] Exposure in a vapour heat chamber:
- with air temperature increasing over a minimum of three hours from room temperature to 47 °C or above at a maximum of 80% relative humidity
 - with air temperature then held at 47 °C or above at a minimum of 90% relative humidity, during which time all fruit within the chamber maintains a core temperature of 46 °C or above for a minimum of 70 minutes.
- [8] After treatment the fruit should not be exposed to accelerated cooling, for example, by water or forced air.
- [9] There is 95% confidence that the treatment according to this schedule kills not less than 99.9841% of eggs and larvae of *Bactrocera dorsalis*.

Other relevant information

- [10] In evaluating this treatment the Technical Panel on Phytosanitary Treatments considered issues associated with temperature regimes and thermal conditioning, taking into account the work of Hallman and Mangan (1997).
- [11] This schedule was based on the work of Santos (1996) and, the BPI-PQS and JICA cooperative study (1988), the latter identifying the egg stage of *B. dorsalis* as the most thermotolerant. The fruit crop used to develop the schedule was the ‘Solo’ cultivar of *C. papaya*.
- [12] The air humidity is lower at the beginning of the treatment to prevent condensation on the fruit and hence maintain fruit quality.

References

- [13] The present annex may refer to ISPMs. ISPMs are available on the International Phytosanitary Portal (IPP) at <https://www.ippc.int/core-activities/standards-setting/ispms>.

BPI-PQS & JICA. 1988. *Vapour heat treatment of papaya for oriental fruit flies disinfection and fruit quality*. A joint report by the Japan International Cooperation Agency (JICA) and the Plant

¹ The scope of phytosanitary treatments does not include issues related to pesticide registration or other domestic requirements for contracting parties’ approval of treatments. Treatments adopted by the Commission on Phytosanitary Measures may not provide information on specific effects on human health or food safety, which should be addressed using domestic procedures prior to contracting parties approving a treatment. In addition, 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. There is no obligation for a contracting party to approve, register or adopt the treatments for use in its territory.

Quarantine Service Bureau of Plant Industry. Department of Agriculture Bureau of Plant Industry, Manila. 58 pp.

- Hallman, G.J. & Mangan, R.L.** 1997. Concerns with temperature quarantine treatment research. In: G.L. Obenauf, ed. *Proceedings of the 1997 Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reduction*, San Diego, CA, 3–5 November 2017, pp. 79-1–79-4. Fresno, CA, Methyl Bromide Alternatives Outreach, Available at <https://www.mbao.org/static/docs/confs/1997-sandiego/papers/079hallman.pdf> (last accessed 1 September 2017).
- Santos, W.** 1996. *Confirmatory test of vapour heat treatment of Solo papaya against oriental fruit fly (Dacus dorsalis Hendel)*. Pampanga Agricultural College, Manila. (Master's thesis).