



[1] **Draft ANNex to ISPM 28:2007: vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* var. *solo* (2009-109)**

[2]

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	2014-04-23
Document category	Draft Annex XX to ISPM 28:2007
Current document stage	2014-04 SC approved for MC
Major stages	2009 Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i> var. <i>Solo</i> submitted 2010-07 TPPT reviewed treatment and requested additional information 2012-05 SC placed treatment on hold pending submission of data 2012-12 TPPT requested additional information 2013-02 TPPT sent Final notice letter to Submitter through Secretariat 2013-05 Submitter responded 2013-07 TPPT reviewed submitter response and recommended to SC for MC 2013-09 TPPT approved treatment schedule (virtual meeting) 2014-02 SC approved draft treatment for MC via e-decision
Treatment lead	2009-01 Ms Alice BAXTER (ZA) 2012-12 Mr Guy HALLMAN (US)
Secretariat notes	2013-09 Formatted in accordance with new requirements 2013-09 Secretariat started using previously revised footnote relating treatment adoption 2014-04 Editor edited the text

[3] **Scope of the treatment**

[4] This treatment comprises the vapour heat treatment of fruit of *Carica papaya* to result in the mortality of eggs and larvae (all ages) of *Bactrocera dorsalis* (oriental fruit fly) at the stated efficacy¹.

[5] **Treatment description**

[6] **Name of treatment** Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya* var. *Solo*

[7] **Active ingredient** N/A

[8] **Treatment type** Physical (vapour heat treatment)

[9] **Target pest** *Bactrocera dorsalis* (Hendel) (Diptera: Tephritidae) (oriental fruit fly)

[10] **Target regulated articles** Fruit of *Carica papaya* var. Solo (L.)

[11] **Treatment schedule**

[12] Exposure in a vapour heat chamber:

[13] at a minimum of 95% relative humidity

[14] with air temperature increasing from room temperature to 47 °C

[15] for at least three hours or until fruit core temperature reaches 46 °C

[16] followed by 70 minutes at a minimum of 95% relative humidity in an air temperature of 47 °C and with fruit pulp temperature at a minimum of 46 °C.

[17] Once the treatment is complete fruit are air-cooled.

[18] The efficacy is effective dose (ED)_{99.86} at the 95% confidence level.

[19] **Other relevant information**

[20] In evaluating this treatment the Technical Panel on Phytosanitary Treatments (TPPT) considered issues associated with temperature regimes and thermal conditioning, taking into account the work of Hallman and Mangan (1997).

[21] This schedule was based on the work of Santos (1996) and developed using the “Solo” variety of *C. papaya*. Although the egg stage was not identified as the most thermotolerant in Santos (1996), seven of nine studies with several species of *Bactrocera* found the egg stage to be the most thermotolerant, while it was the second most thermotolerant stage in the other two studies (Corcoran, 2001; Corcoran *et al.*, 1993; Heard *et al.*, 1992; Heather *et al.*, 1997; Heather *et al.*, 2002). Therefore, there is confidence that the egg stage is the most thermotolerant (at least for heated air treatments) for *Bactrocera*.

[22] **References**

[23] **Corcoran, R.J.** 2001. Fruit fly (Diptera: Tephritidae) responses to quarantine heat treatment. University of Queensland, Brisbane. (PhD thesis)

[24] **Corcoran, R.J., Heather, N.W. & Heard, T.A.** 1993. Vapor heat treatment for zucchini infested with *Bactrocera cucumis* (Diptera: Tephritidae). *Journal of Economic Entomology*, 86: 66–69.

[25] **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, USA, Nov. 3–5. pp. 79-1–79-4.

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- [26] **Heard, T.A., Heather, N.W. & Peterson, P.M.** 1992. Relative tolerance to vapor heat treatment of eggs and larvae of *Bactrocera tryoni* (Diptera: Tephritidae) in mangoes. *Journal of Economic Entomology*, 85: 461–463.
- [27] **Heather, N.W., Corcoran, R.J. & Kopittke, R.A.** 1997. Hot air disinfestation of Australian ‘Kensington’ mangoes against two fruit flies (Diptera: Tephritidae). *Postharvest Biology and Technology*, 10: 99–105.
- [28] **Heather, N.W., Kopittke, R.A. & Pike, E.A.** 2002. A heated air quarantine disinfestation treatment against Queensland fruit fly (Diptera: Tephritidae) for tomatoes. *Australian Journal of Experimental Agriculture*, 42: 1125–1129.
- [29] **Santos, W.** 1996. *Confirmatory test of vapour heat treatment of Solo papaya against oriental fruitfly* (*Dacus dorsalis* *Hendel*). Pampanga Agricultural College, Manila. (Master’s thesis)
- [30] **Footnote 1:** The scope of phytosanitary treatments does not include issues related to pesticide registration or other domestic requirements for contracting parties’ approval of treatments. IPPC adopted treatments 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.