



[1] **Draft Annex to ISPM 28: Vapour heat treatment for *Ceratitis capitata* on *Mangifera indica* (2010-106)**

[2]

Status box	
<i>This is not an official part of the annex to the standard and it will be modified by the IPPC Secretariat after adoption.</i>	
Date of this document	2016-12-16
Document category	Draft annex to ISPM 28
Current document stage	To CPM for adoption
Major stages	2007-03 CPM-2 added topic Fruit fly treatments 2010-04 Vapour heat treatment for <i>Ceratitis capitata</i> on <i>Mangifera indica</i> submitted in response to 2009-12 call for treatments 2010-07 TPPT reviewed treatment and requested additional information from the Submitter 2012-02 TPPT requested additional information from Submitter 2012-12 TPPT requested additional information from Submitter 2013-02 TPPT sent final notice letter to Submitter through Secretariat 2013-05 Submitter provided additional information 2013-07 TPPT reviewed the draft and the additional information provided by the Submitter and recommended to SC for member consultation 2014-02 SC approved for member consultation via e-decision (2014_eSC_May_04) 2014-07 First consultation 2015-11 SC assigned the status "pending" 2016-07 Modified by Treatment Lead (GH) in response to country comments 2016-09 TPPT meeting (The TPPT decided that despite any possible differences in reaction to VHT exist among populations of <i>C. capitata</i>, the robustness of this treatment as exemplified by the very large number (> 165,000) of eggs (the most tolerant stage) treated in confirmatory testing compensated for any differences and thus recommended it to the SC) 2016-09 TPPT approval of responses to consultation comments via e-decision (2016_eTPPT_Sep_01) 2016-11 SC recommended to CPM-12 for adoption via e-decision (2016_eSC_Nov_12)
Treatment Lead	2013-09 Mr Guy HALLMAN (US/IAEA) 2012-12 Mr Min-Goo PARK (KR) 2010-07 Mr Scott WOOD (US) 2013-09 Mr Guy HALLMAN (US/IAEA)
Notes	2013-09 Formatted in accordance with new requirements 2013-09 Secretariat started using previously revised footnote relating to treatment adoption 2014-04 Edited 2016-11 Edited <i>This treatment will be formatted after adoption, ensuring that footnotes are on the same page as where the footnote cue appears.</i>

[3] **Scope of the treatment**

[4] This treatment describes the vapour heat treatment of fruit of *Mangifera indica* to result in the mortality of eggs and larvae of *Ceratitis capitata* at the stated efficacy¹.

[5] Treatment description**[6] Name of treatment** Vapour heat treatment for *Ceratitis capitata* on *Mangifera indica***[7] Active ingredient** N/A**[8] Treatment type** Physical (vapour heat)**[9] Target pest** *Ceratitis capitata* (Wiedemann, 1824) (Diptera: Tephritidae)**[10] Target regulated articles** Fruit of *Mangifera indica* 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 or above**[15]** – for at least two hours or until fruit core temperature reaches 46.5 °C**[16]** – followed by ten minutes at a minimum of 95% relative humidity in a minimum air temperature of 47 °C and with fruit core temperature maintained at a minimum of 46.5 °C (of largest fruit).**[17]** Once the treatment is complete, fruits may be hydro-cooled to reach ambient temperature.**[18]** There is 95% confidence that the treatment according to this schedule kills not less than 99.9968% of eggs and larvae of *Ceratitis capitata*.**[19] Other relevant information****[20]** 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).**[21]** This schedule was based on the work of Heather *et al.* (1997) and was developed using the cultivar “Kensington Pride”, and using failure to pupariate as the measure of mortality. The egg stage was found to be the most thermotolerant among pre-pupal stages of *C. capitata* at temperatures from 41 °C to 44 °C; however, at 45 °C, the third instar appeared to be slightly more thermotolerant.**[22] References**

The present annex to the standard may refer to international standards for phytosanitary measures (ISPMs). ISPMs are available on the International Phytosanitary Portal (IPP) at <https://www.ippc.int/core-activities/standards-setting/ispm>.

[23] Hallman, G.J. & Mangan, R.L. 1997. Concerns with temperature quarantine treatment research. In G.L. Obenauf, ed. 1997 *Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reduction*, San Diego, CA, 3–5 November, pp. 79–1–79–4.**[24]** 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.**[25]** **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. 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 before contracting parties approve 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.